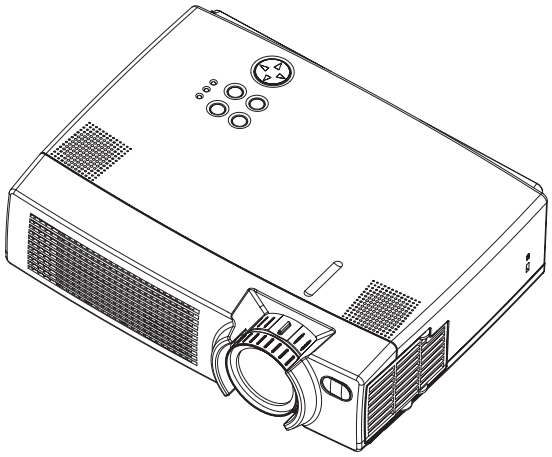
HITACHI

SERVICE MANUAL

SM0519

CPX380W (C4X3)
PJ750-2 (C4X3)



Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi Multimedia LCD Projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

ServiceWarning

When replacing the lamp, avoid burns to your fingers, the lamp becomes very hot.

1. Never touch the lamp bulb with a finger or anything else.
2. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of power unit (main), when turn on the projector.
4. Do not touch the exhaust fan during operation.
5. The LCD module assembly is likely to be damaged. If replacing the LCD module assembly, do not hold the FPC of the LCD module assembly.
6. Use the cables which are included with the projector or specified.

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Multimedia LCD Projector

December 2001 Digital Media Systems Division

1. Features

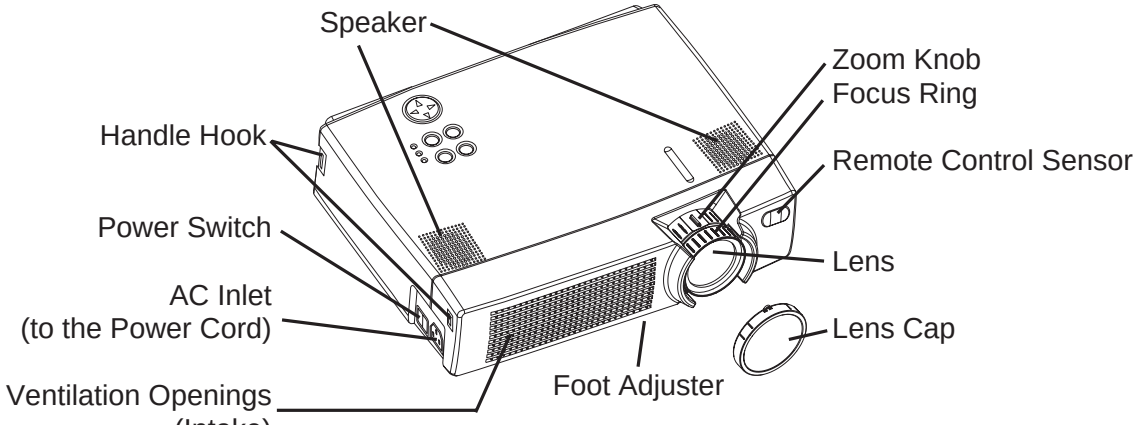
- High brightness, High resolution
- Compact size, light weight for portability
- RS-232C Communication
- Complies with VESA DDC1/2B specifications
- Auto-adjustment function

2. Specifications

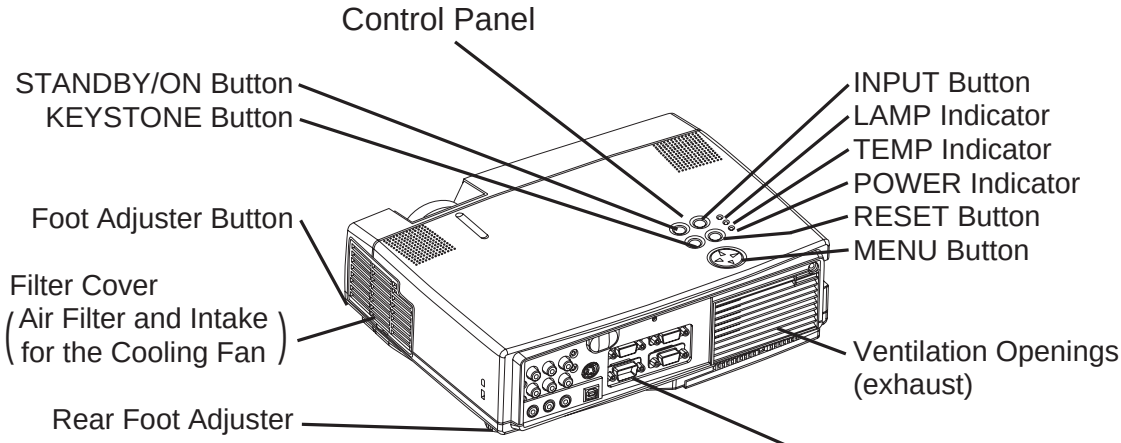
Liquid crystal panel	Drive system		TFT active matrix
	Panel size		0.9 inches
	Number of pixels		1024 (H) × 768 (V)
Lamp			200W UHB
RGB signal input	RGB IN	1	Video: Analog 0.7Vp-p, 75Ω terminator H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level D-sub 15-pin shrink jack
		2	
	AUDIO IN	1	200mVrms, 47kΩ (max. 3.0Vp-p) Stereo mini jack
		2	
Video signal input	VIDEO IN		1.0Vp-p, 75Ω terminator RCA jack
	S-VIDEO IN		Brightness signal: 1.0Vp-p, 75Ω terminator Color signal: 0.286Vp-p (NTSC, burst signal), 75Ω terminator 0.3Vp-p (PAL/SECAM, burst signal), 75Ω terminator Mini DIN 4-pin jack
	COMPONENT VIDEO	Y	1.0Vp-p, 75Ω terminator (positive)
		C_B/C_R	0.7Vp-p, 75Ω terminator (positive)
		P_B/P_R	0.7Vp-p, 75Ω terminator (positive)
	AUDIO IN	L	200mVrms, 50kΩ (max. 3.0Vp-p) RCA jack
		R	
Signal output	RGB OUT		Video: Analog 0.7Vp-p, 75Ω output impedance (positive) H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level D-sub 15-pin shrink jack
	AUDIO OUT		200mVrms, output impedance 1kΩ (max. 3.0Vp-p) Stereo mini jack
Audio input			200mVrms, 47kΩ
Speaker output			1W +1W (stereo)
Power supply			AC100~120V/3.3A, AC220~240V/1.4A
Power consumption			310W
Dimensions			298 (W) × 94.6 (H) × 228 (D) mm
Weight			3.25kg (7.2lbs)
Temperature range			Operation : 0~35°C Storage : -20~60°C
Accessories			Remote control transmitter × 1 RGB cable × 1 Component cable × 1 Mouse cable (PS/2) × 1 POWER cord × 3 Battery × 2 Carrying bag × 1 Handle × 1 User's manual (with Safety Instructions)× 1

3. Names of each Part

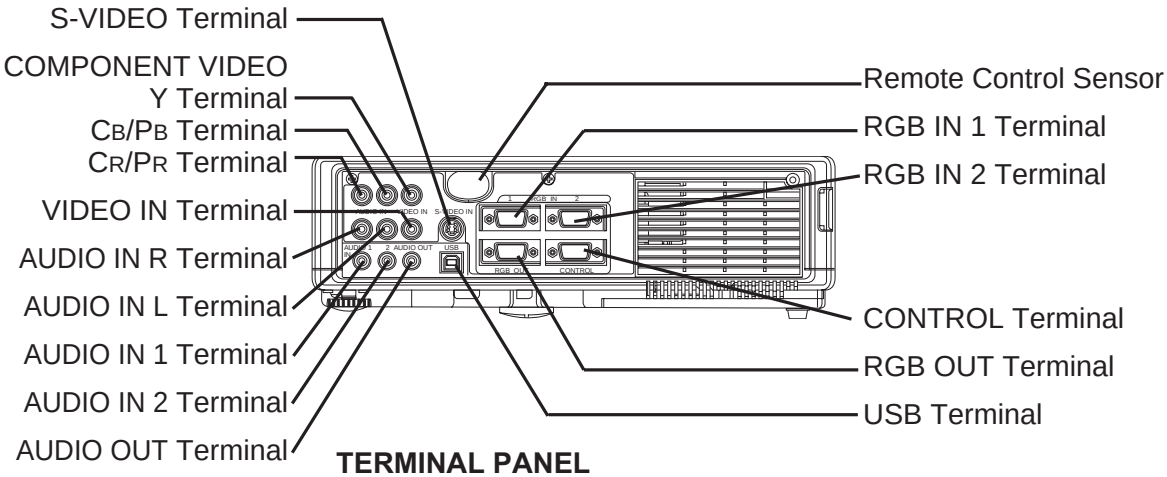
● Parts names



FRONT/LEFT VIEW OF THE PROJECTOR

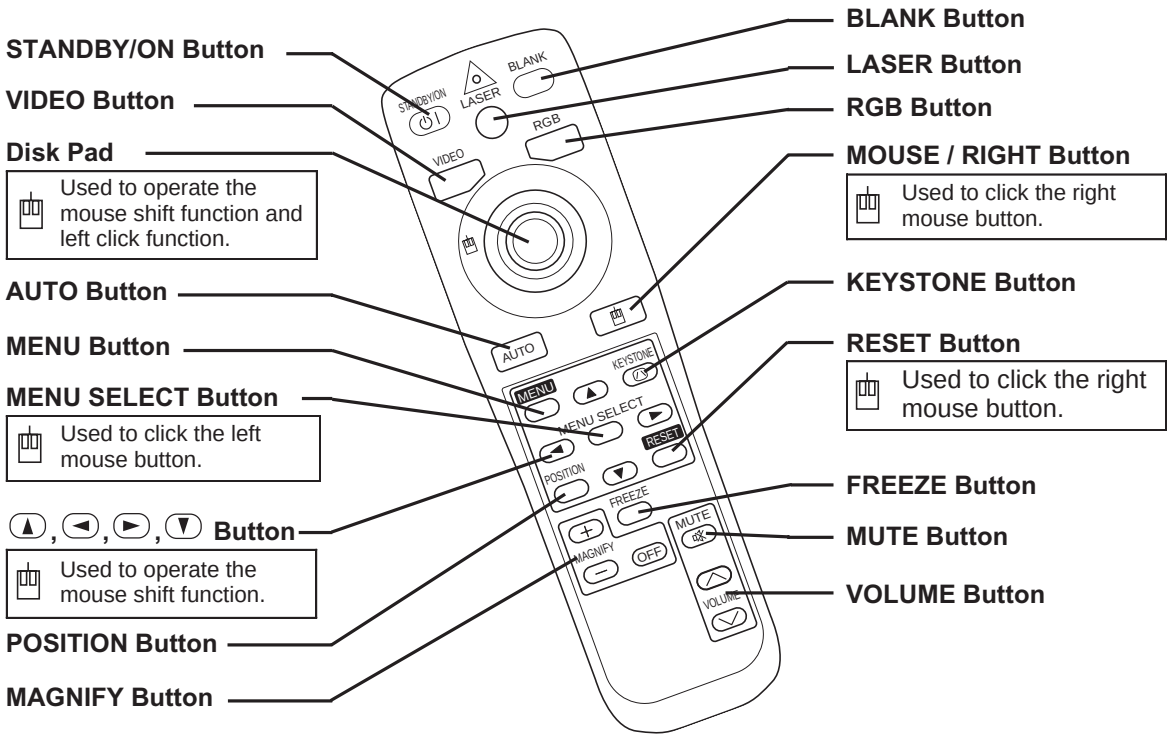


REAR/RIGHT VIEW OF THE PROJECTOR



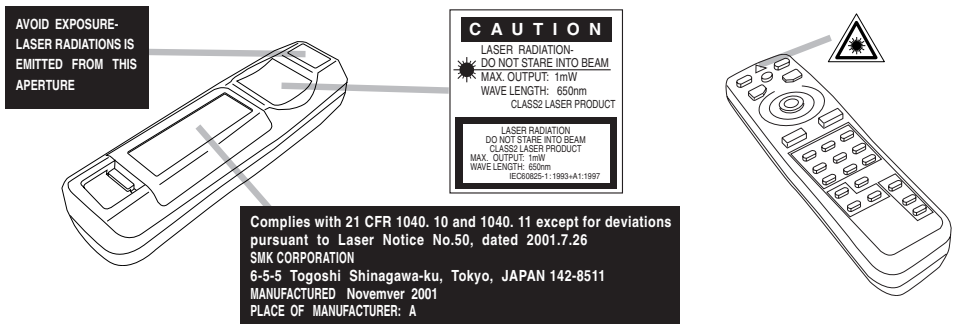
TERMINAL PANEL

● Remote control transmitter



These functions works when the mouse control function is activated. Remember, the POSITION, BLANK ON and MENU ON functions disable the mouse control function.

⚠ WARNING • The laser pointer of the remote control transmitter is used in place of a finger or rod. Never look directly into the laser beam outlet or point the laser beam at other people. The laser beam can cause vision problems.



NOTE • Keep the remote control transmitter away from children and pets.
- Do not give the remote control transmitter any physical impact. Take care not to drop.
- Do not place the heavy objects on the remote control transmitter.
- Do not wet the remote control transmitter or place it on any wet object.
- Do not place the remote control transmitter close to the cooling fan of the projector.
- Do not disassemble the remote control transmitter.

4. Adjustment

4-1 Before adjusting

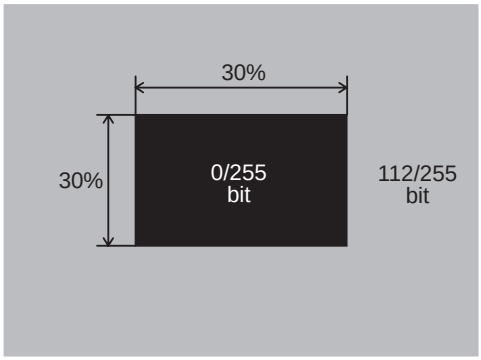
1. Before starting adjustment, warm up the projector for about 10 minutes.(Blank white)
2. Set Zoom Wide to Max. And project an image a distance of more than 40 inches and set the normal at “WHISPER” mode.
3. Normalising the video adjustment.
   (Press the [MENU] button of the Remote control transmitter to display the Setup menu, and then press the [RESET] button. And select the [DEFAULT].)
   *note : The setup menu is not displayed when no signal.

Model PJ750-2 only

4. Set the other [MENU] items as follows.
   a. GAMMA in the IMAGE menu is NORMAL.
   b. COLOUR TEMP. in the IMAGE menu is NORMAL.
   c. WHISPER in the OPT menu is NORMAL.
5. Perform all adjustments from the Adjustment menu. Perform the following operations to display the Adjustment menu.
   a. Press the [MENU] button of the Remote control transmitter (the Setup menu will appear).
   b. Next, press the [RESET] button one time. And press the [RESET] button again for 5 seconds or more (the Adjustment menu will appear).

4-2 Ghost adjustment

Signals for internal adjustment

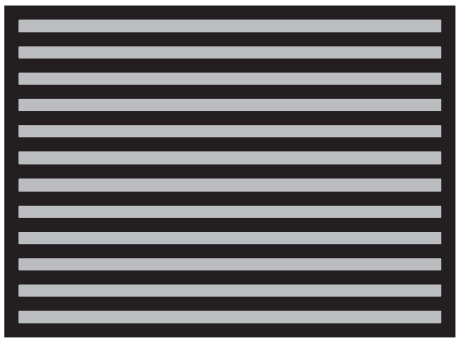


Adjustment procedure

1. Use DAC-P - GHOST - R: in the Adjustment menu to adjust so that R colour ghost is at a minimum.
   (Set the adjustment value to default, and then raise the value. When a ghost appears to the left of a vertical line, reduce the value by 2 steps.)
2. In the same way, use DAC-P - GHOST-G: in the Adjustment menu to adjust so that G colour ghost is at a minimum.
3. In the same way, use DAC-P - GHOST-B: in the Adjustment menu to adjust so that B colour ghost is at a minimum.

4-3 Flicker adjustment (V.COM adjustment)

Signals for internal adjustment

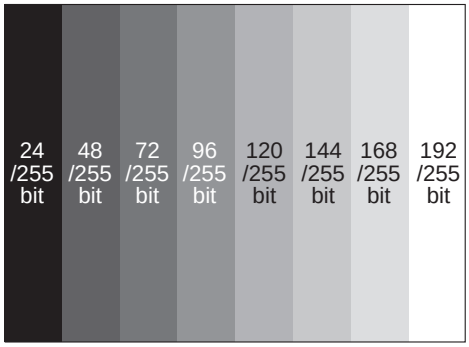


Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-2 Ghost adjustment.
2. Use DAC-P - V.COM - R: in the Adjustment menu to adjust so that the flicker at the centre of the screen is less than the flicker at the periphery.
   (When the flicker is about the same across the whole screen, adjust so that the flicker at the centre of the screen is somewhat less than elsewhere.)
3. In the same way, use DAC-P - V.COM-G: in the Adjustment menu to adjust the G colour flicker.
4. In the same way, use DAC-P - V.COM-B: in the Adjustment menu to adjust the B colour flicker.

4-4 NRSH adjustment (vertical stripe adjustment)

Signals for internal adjustment



Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-3 Flicker adjustment.
2. Use DAC-P - NRSH - R: in the Adjustment menu to adjust so that the vertical lines spaced every 6 or 12 dots are as inconspicuous as possible.
   (Reduce the adjustment value when black stripes appear in the 2nd or 3rd tone from the black side. Note that when the adjustment value is lowered, white stripes may appear in the 2nd or 3rd tone from the bright side. Should this happen, adjust so that the stripes are as inconspicuous as possible.)
3. In the same way, use DAC-P - NRSH - G: in the Adjustment menu to adjust vertical stripes of G colour.
4. In the same way, use DAC-P - NRSH - B: in the Adjustment menu to adjust vertical stripes of B colour.

4-5 White balance adjustment

Preparations

1. Perform these adjustments after the NRSH adjustment described in Section 4-4.
2. Reset gamma correction before adjustment.
   - Place the cursor on [GAMMA] in the Adjustment menu, press the [RESET] key and select [DEFAULT].
   - Now press the [RESET] key again and press the [MAGNIFY-OFF] button of the Remote control transmitter for 5 seconds or more (the confirming to “MICRO” reset menu will appear).

Adjustment procedure

1. First, adjust the G colour.
2. BRIGHT and CONTRAST set to MAX in the Setup menu.
3. Place the cursor on Slide Show in the Adjustment menu [A/D], press the [▶] key three times to display G monochrome and adjust the luminance at the centre of the screen. Make a note of the setting (here assumed to be A [lx]). Press the MENU key to return.
4. BRIGHT and CONTRAST is returned to default in the Setup menu.
5. Adjust Gamma, SHIFT, and G: in the Adjust menu so that luminance (Y) at the centre of the screen is adjusted as follows.
   Y = A x 0.798 ± 1 [%]
6. Adjust Gamma, 86%, and G: in the Adjust menu so that luminance (Y) at the centre of the screen is adjusted as follows.
   Y = A x 0.675 ± 1 [%]
7. Adjust Gamma, 75%, and G: in the Adjust menu so that luminance (Y) at the centre of the screen is adjusted as follows.
   Y = A x 0.504 ± 1 [%]
8. Adjust Gamma, 43%, and G: in the Adjust menu so that luminance (Y) at the centre of the screen is adjusted as follows.
   Y = A x 0.147 ± 2 [%]
9. Adjust Gamma, 29%, and G: in the Adjust menu so that luminance (Y) at the centre of the screen is adjusted as follows.
   Y = A x 0.060 ± 2 [%]
10. Adjust Gamma, 14%, and G: in the Adjust menu so that luminance (Y) at the centre of the screen is adjusted as follows.
    Y = A x 0.014 ± 2 [%]

11. Adjust Gamma, 0%, G: and R: and B: so that the following values.
    [0%][R:] = -96
    [0%][G:] = -96
    [0%][B:] = -112
12. Now, adjust the R and B colours.
13. Adjust Gamma, 86%, R: and B: so that the colour coordinates (x, y) at the centre of the screen take on the following values.
    x = 0.290 ± 0.001
    y = 0.340 ± 0.002

    Model PJ750-2
    x = 0.290 ± 0.001
    y = 0.350 ± 0.002
14. Adjust Gamma, 93%, R: and B: so that the following values.
    [93%][R:] = [86%][G:]
    [93%][B:] = [86%][B:]
15. Adjust Gamma, 75%, R: and B: so that the colour coordinates (x, y) at the centre of the screen take on the following values.
    x = 0.286 ± 0.001
    y = 0.330 ± 0.002

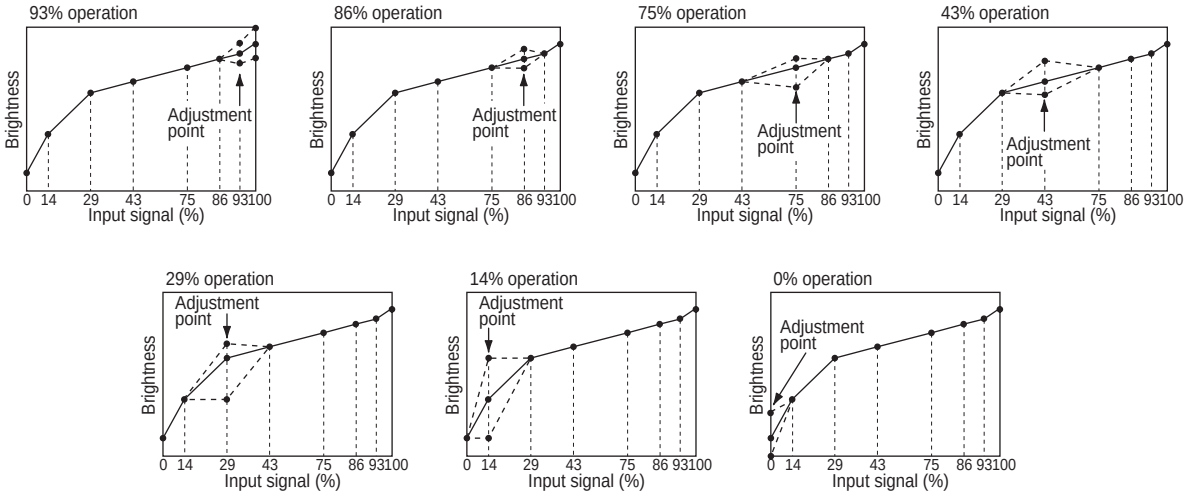
    Model PJ750-2
    x = 0.284 ± 0.001
    y = 0.340 ± 0.002
16. Adjust Gamma, 43%, R: and B: so that the colour coordinates (x, y) at the centre of the screen take on the following values.
    x = 0.286 ± 0.001
    y = 0.330 ± 0.002

    Model PJ750-2
    x = 0.280 ± 0.001
    y = 0.340 ± 0.002
17. Adjust Gamma, 29%, R: and B: so that the colour coordinates (x, y) at the centre of the screen take on the following values.
    x = 0.282 ± 0.001
    y = 0.320 ± 0.002

    Model PJ750-2
    x = 0.270 ± 0.001
    y = 0.330 ± 0.002
18. Adjust Gamma, 14%, R: and B: so that the colour coordinates (x, y) at the centre of the screen take on the following values.
    x = 0.270 ± 0.001
    y = 0.290 ± 0.002

    Model PJ750-2
    x = 0.260 ± 0.001
    y = 0.300 ± 0.002

Adjustment operations (reference)

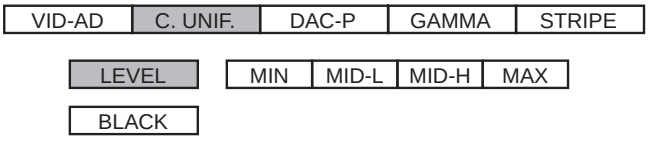


4-6 Colour uniformity adjustment

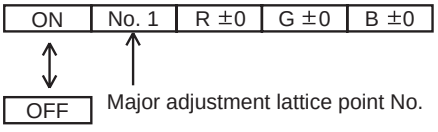
Preparations

1. Perform these adjustments after the white balance adjustment described in Section 4-5.
2. Make a colour uniformity adjustment for the following four tones.
   - MIN tone (approx. 10% input signal)
   - MID-L tone (approx. 21% input signal)
   - MID-H tone (approx. 50% input signal)
   - MAX tone (approx. 75% input signal)
3. Place the cursor on the tone to be adjusted in the Adjust menu and press the [▼] key. This displays the Adjust Tone menu at the bottom of the screen. Select the major adjustment lattice point No. and colour, and then adjust them.
4. The major adjustment lattice point numbers (a total of 17 points) corresponds to the major adjustment lattice point positions in the diagram on the right. The colour uniformity of the entire screen can be adjusted by adjusting the white balance for each of the points starting in order from the low numbers.
5. Adjustment point No.1 should not be adjusted, because it controls the brightness of the entire screen.
6. To temporarily turn correction off, place the cursor on “ON” in the Adjust Tone menu and press the [▼] key. To turn it on again, place the cursor on OFF in the Adjust Tone menu and press the [▲] key.
7. Although this adjustment can also be made using internal signals, we will here use the [MENU SELECT] key on the Remote control transmitter to select the following two signals.
   - Solid monochrome adjustment colour (use G color adjustment when a colour differential meter is used).
   - Solid white (use for adjustment other than above).
8. Reset colour-shading correction before adjustment.
   - When 4 tones and all colours are to be reset, place the cursor on [C.UNIF.] in the Adjustment menu, press the [RESET] key and select [DEFAULT].
   - When only 1 tone is to be reset, place the cursor on the tone to be reset, press the [RESET] key and select [DEFAULT].
   - Single tone and monochrome resets cannot be performed.

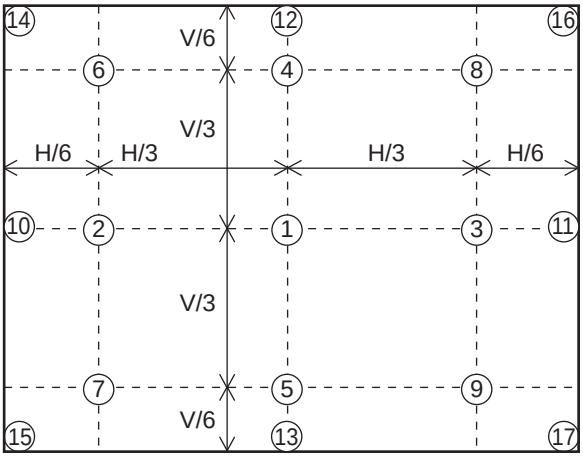
Adjust menu



Adjust Tone menu



Major adjustment lattice point position



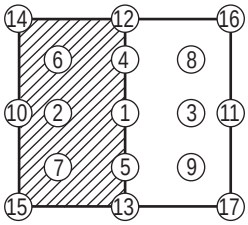
Adjustment procedure 1
(when a colour differential meter is used)

1. First adjust [MID-L] tone [G:].
2. Select adjustment point [No.2][G:].
   When the background is not [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid [G] monochrome.
3. Measure the illumination at adjustment points No. 2, No.3, No.10 and No.11.
   The values should be:
   No.2 = Y2 [lx] No.10 = Y10 [lx]
   No.3 = Y3 [lx] No.11 = Y11 [lx]
4. No.2 and No.3 adjustment point have the average of Y2 and Y3.
   Y2 = (Y2 + Y3) / 2 ± 2 [%]
   Y3 = (Y2 + Y3) / 2 ± 2 [%]
5. No.10 and No.11 adjustment point have the average of Y10 and Y11.
   Y10 = (Y10 + Y11) / 2 ± 2 [%]
   Y11 = (Y10 + Y11) / 2 ± 2 [%]
6. Then adjust [MID-L] tone [R] and [B].
   When the background is [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
7. Measure the colour coordinates of adjustment point [No.1] and make a note of them.
   Assume that they are x = x1, y = y1.
   Note: When the CL-100 colour and colour difference meter is used, the [Δ](delta) mode is convenient. When adjustment point [No.1] colour coordinate has been selected, set the slide switch on the side to [Δ](delta) while holding down the [F] button on the front panel. The measurement shown after this displays the deviation from measurement point 1.
8. Measure the colour coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
   x = x1 ± 0.005 , y = y1 ± 0.010
9. Similarly, measure adjustment points [No.3] to [No.17] and adjust their colour coordinates starting in order from the small number points.
   This completes adjustments required for [MIN].
   Note: Since excessive correction may lead to a correction data overview during internal calculations, use the following values for reference.
   [No.2] to [No.5] ± 40 or less
   [No.6] to [No.9] ± 50 or less
   [No.10] to [No.13] ± 70 or less
   [No.14] to [No.17] ± 120 or less
10. Then adjust [MIN] tone [G] so that the adjustment data set two times as much as [MID-L] tone [G].
    This completes [G] colour adjustments.
11. Then adjust [MIN] tone [R] and [B].
    Select [No.2] [B:] and press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
12. Measure the colour coordinates of adjustment point [No.1] and make a note of them.
    Assume that they are x = x1, y = y1.
13. Now measure the colour coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
    x = x1 ± 0.005 , y = y1 ± 0.010 (Target)
    x = x1 ± 0.020 , y = y1 ± 0.040
14. Similarly, measure adjustment points [No.3] to [No.17] and adjust their colour coordinates starting in order from the small number points.
    This completes [MIN] tone adjustments.
15. Now make similar adjustments for [MID-H] tone.
    (Adjust [MID-H] tone [G] so that the adjustment data set half as many as [MID-L] tone [G].)
16. Now make similar adjustments for [MAX] tone.
    (Adjust [MAX] tone [G] so that the adjustment data set half as many as [MID-L] tone [G].)

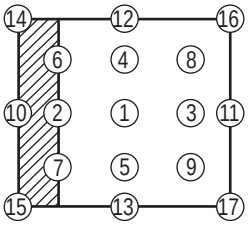
Adjustment procedure 2
(visual inspection)

1. First adjust [MIN] tone [G:].
2. Select [No.2] [G:].
   If the background is [G] monochrome, press the [MENU SELECT] key on the Remote control transmitter to change to solid white.
3. View measurement point [No.2] and [No.3].
   Lower the [G] colour intensity only of the colour point whose [G] colour is more intense than measurement point [No.1].
4. View measurement point [No.10] and [No.11].
   Lower the [G] colour intensity only of the colour point whose [G] colour is more intense than measurement point [No.1], and raise the intensity of the point whose colour intensity is lower than measurement point [No.1].
5. Now adjust the [MIN] tone for colours [R] and [B].
6. View measurement points [No.2], [No.3], [No.10] and [No.11]. Adjust the [R] and [B] of each measurement point so that they have the same colour as measurement point [No.1].
   Adjustment technique:
   First, adjust [B:] of the point whose colour is to be adjusted so that it approximates that of [No.1]. If [R:] is low at this time, the image will have cyan cast, in which case [R:] is increased. On the other hand, if [R:] is excessive, the image will have a magenta cast, in which case [R:] is decreased.
   Overall, a cyan cast makes it easy to see colour shading.
7. Next, view measurement points [No.4], [No.5], [No.12], [No.13] and make similar adjustments.
8. Then adjust measurement points [No.6], [No.7], [No.8], [No.9], [No.14], [No.15], [No.16] and [No.17].
   This completes the [MIN] tone adjustments.
9. Make similar another three tones as described in steps 1 to 8 above.

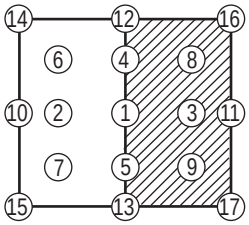
No. 2 deviation range



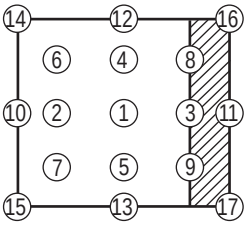
No. 10 deviation range



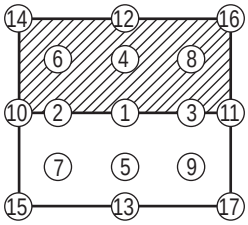
No. 3 deviation range



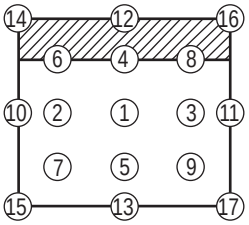
No. 11 deviation range



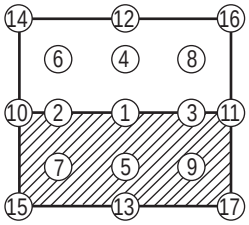
No. 4 deviation range



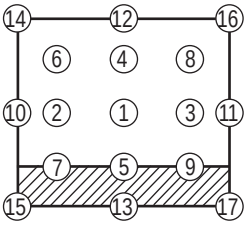
No. 12 deviation range



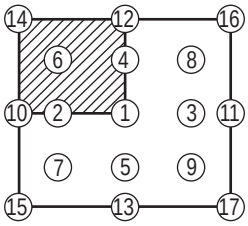
No. 5 deviation range



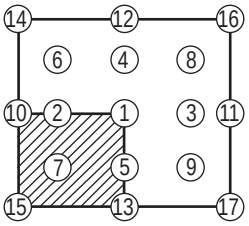
No. 13 deviation range



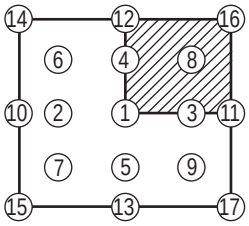
No. 6 deviation range



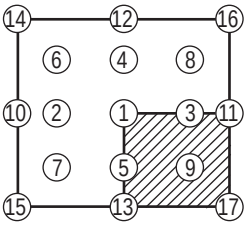
No. 7 deviation range



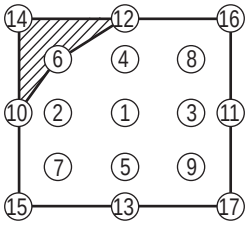
No. 8 deviation range



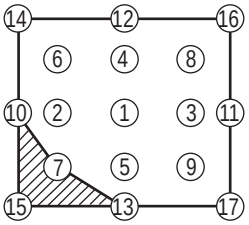
No. 9 deviation range



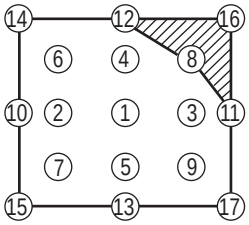
No. 14 deviation range



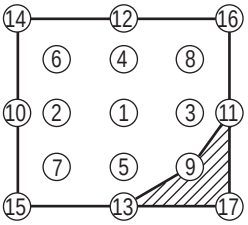
No. 15 deviation range



No. 16 deviation range

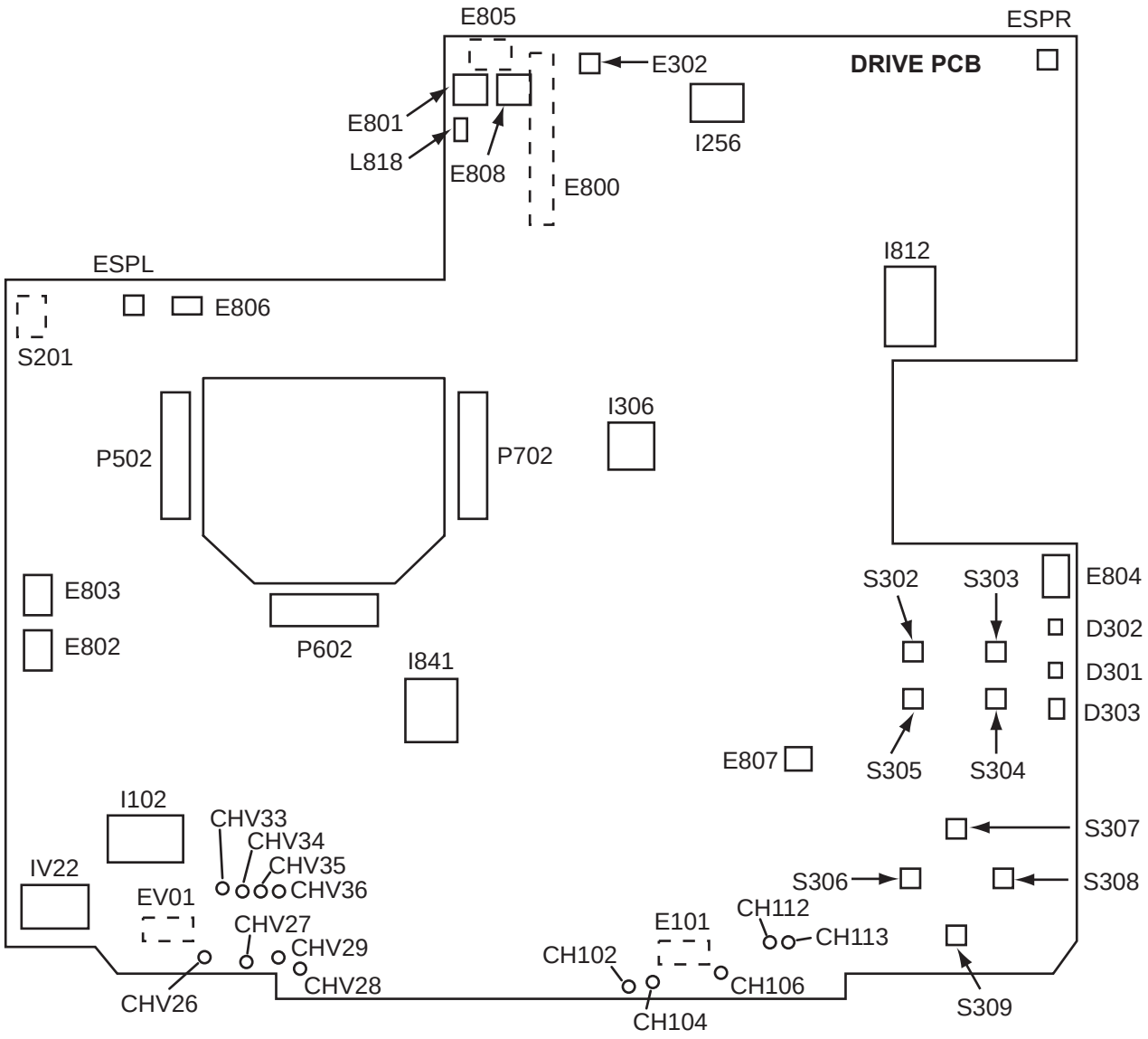


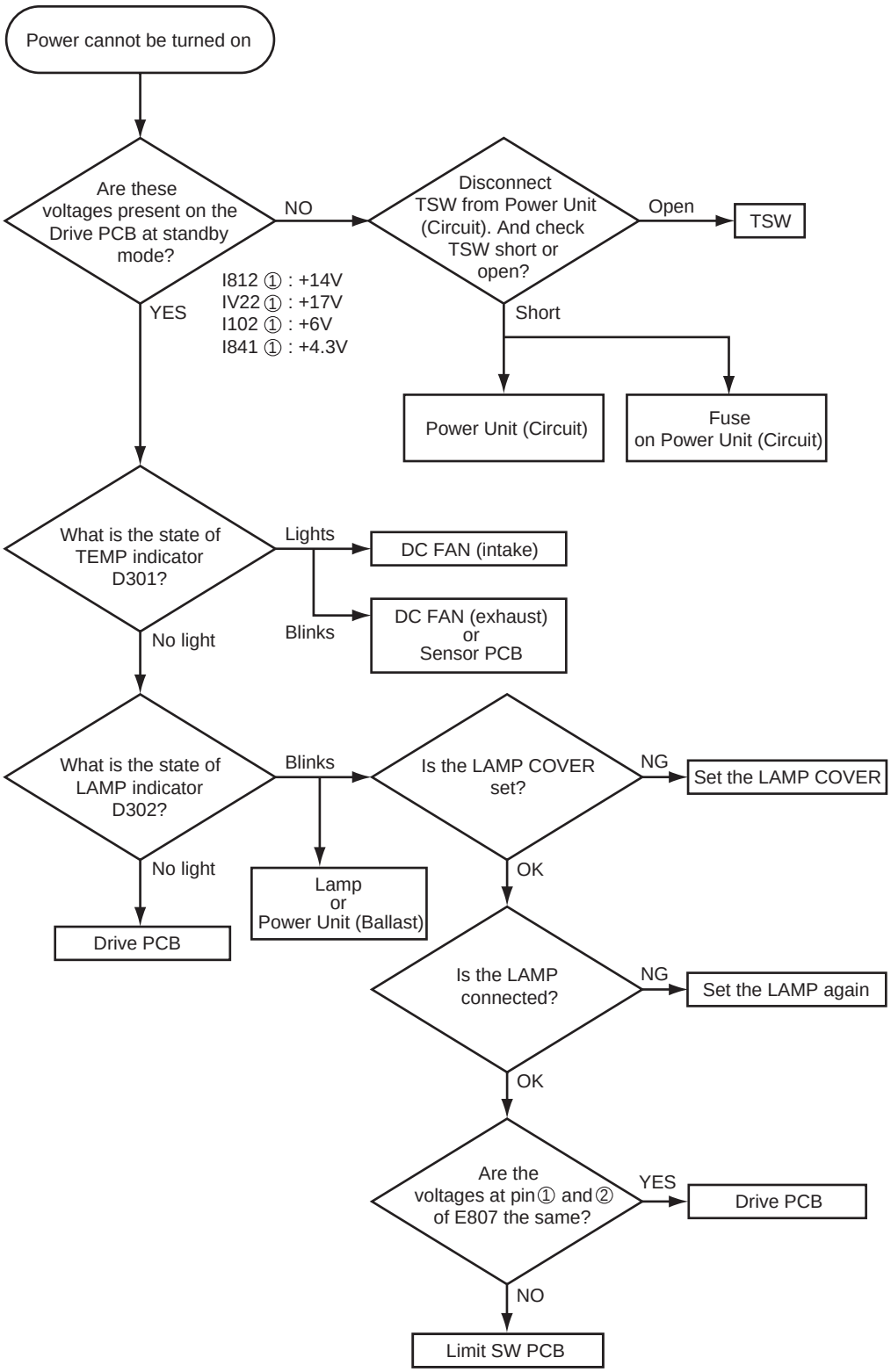
No. 17 deviation range

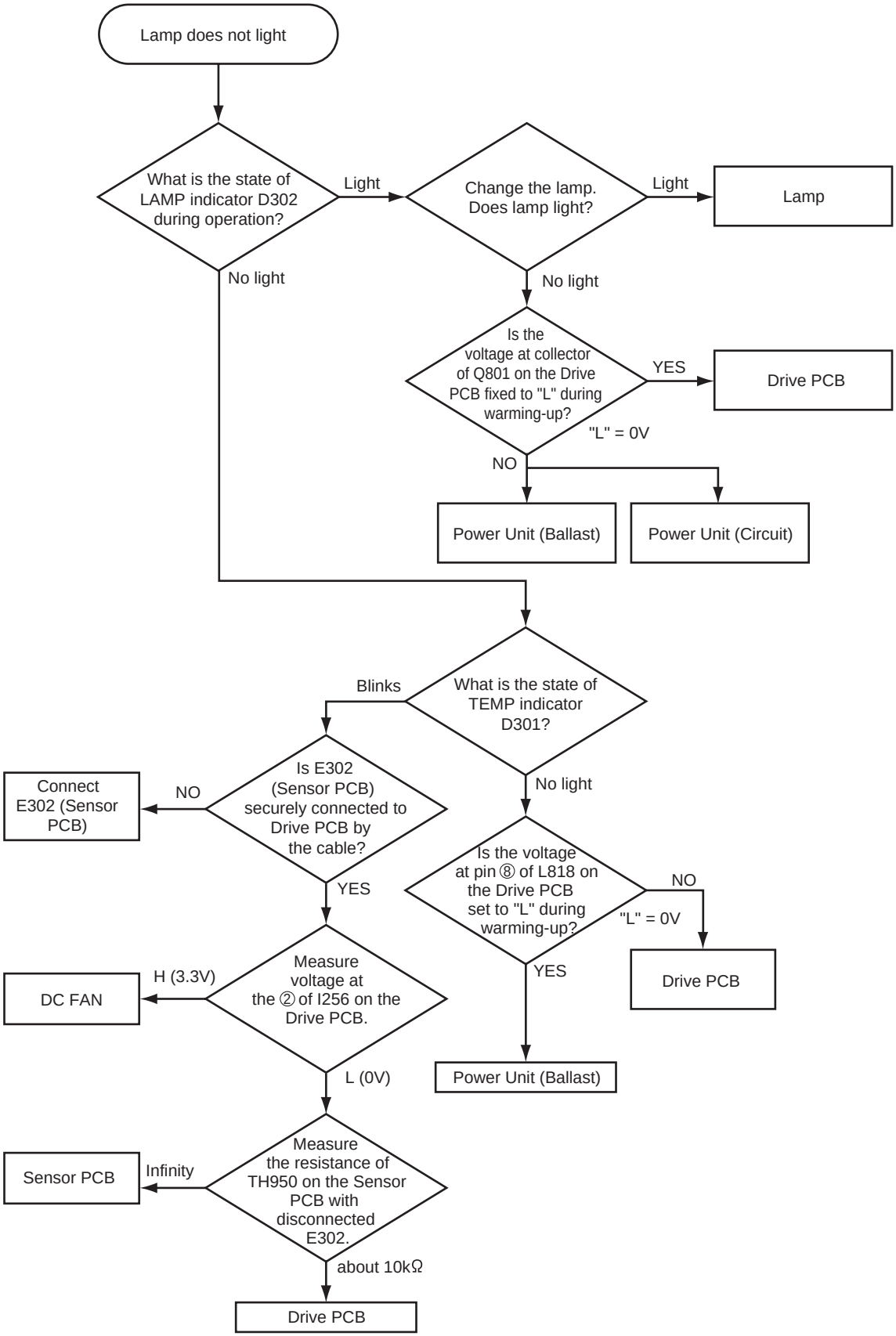


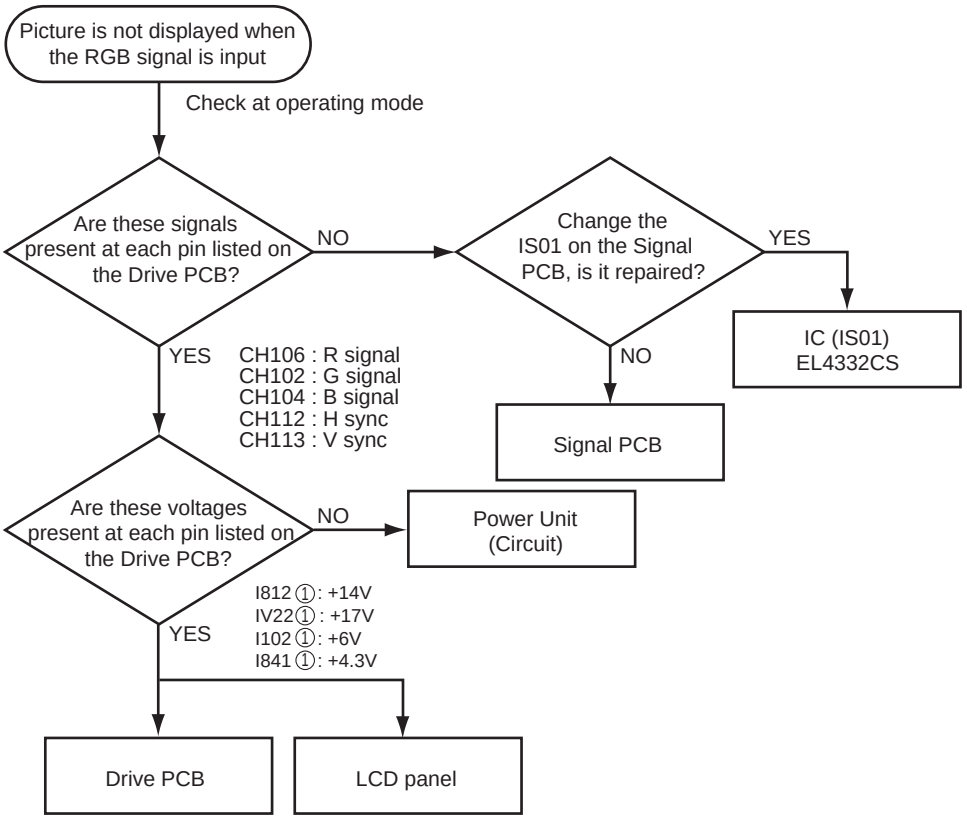
5. Troubleshooting

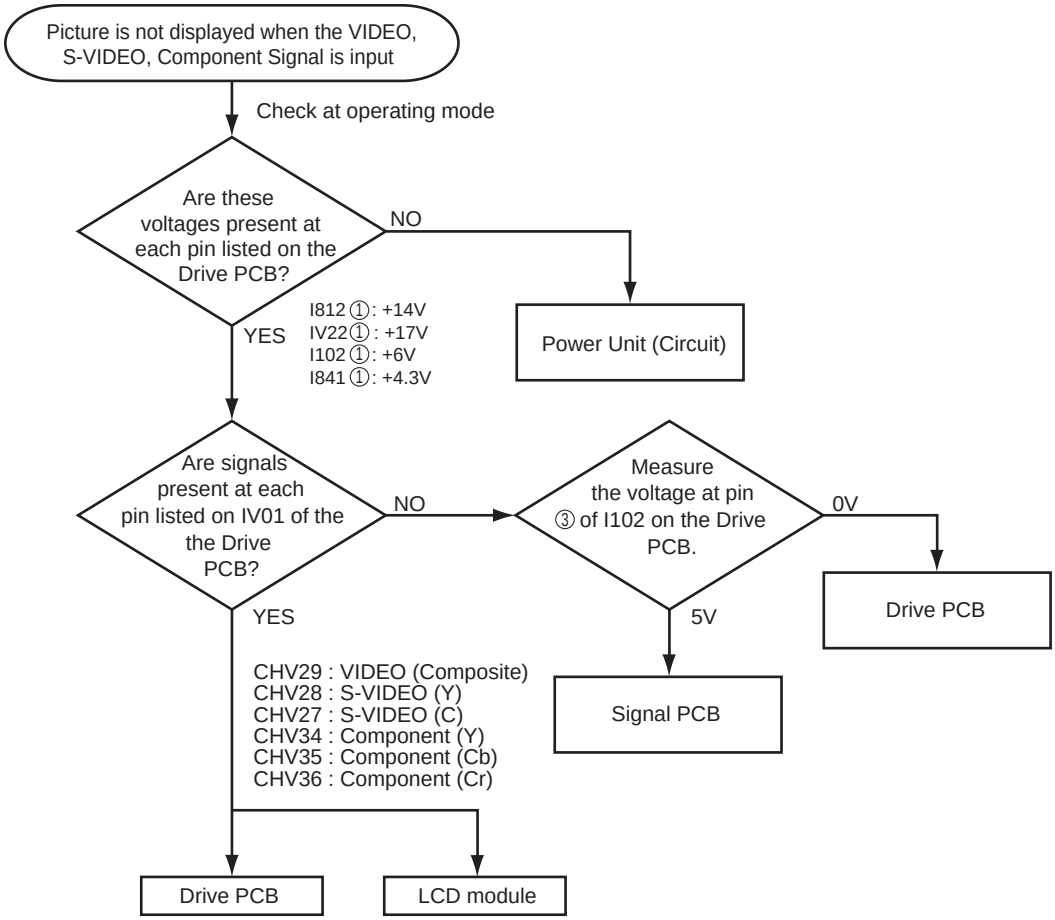
Check points for troubleshooting

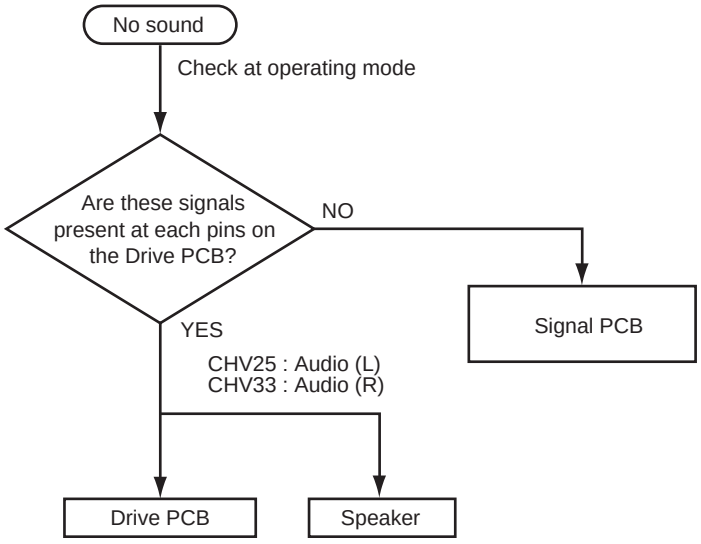


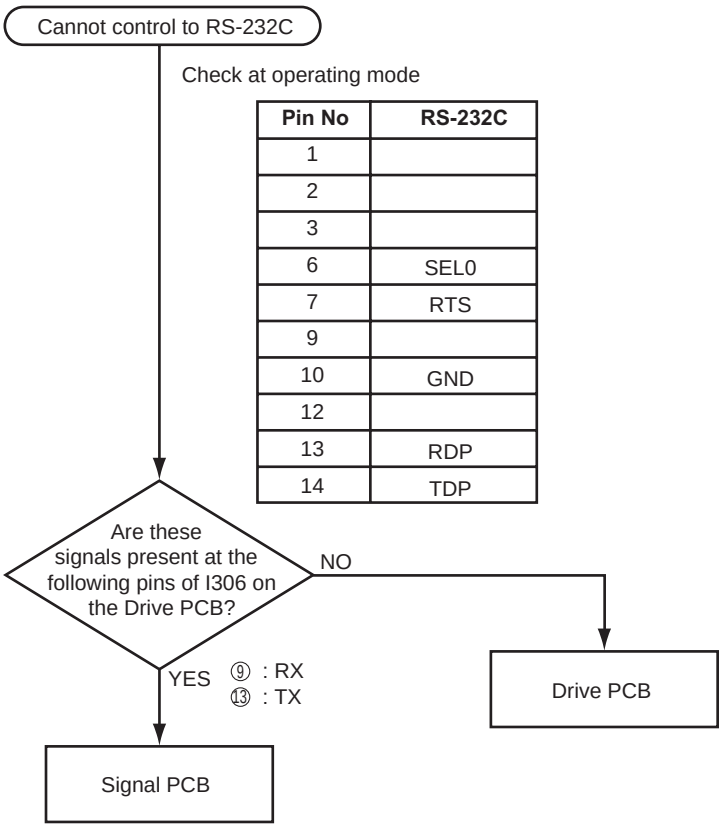

Power cannot be turned on
Are these voltages present on the Drive PCB at standby mode?
NO
Disconnect TSW from Power Unit (Circuit). And check TSW short or open?
Open
TSW
Short
Power Unit (Circuit)
Fuse on Power Unit (Circuit)
YES
I812 ① : +14V
IV22 ① : +17V
I102 ① : +6V
I841 ① : +4.3V
What is the state of TEMP indicator D301?
Lights
DC FAN (intake)
Blinks
DC FAN (exhaust) or Sensor PCB
No light
What is the state of LAMP indicator D302?
Blinks
Is the LAMP COVER set?
NG
Set the LAMP COVER
OK
No light
Drive PCB
Lamp or Power Unit (Ballast)
Is the LAMP connected?
NG
Set the LAMP again
OK
Are the voltages at pin① and② of E807 the same?
YES
Drive PCB
NO
Limit SW PCB


Lamp does not light
What is the state of LAMP indicator D302 during operation?
Light
Change the lamp. Does lamp light?
Light
Lamp
No light
No light
Is the voltage at collector of Q801 on the Drive PCB fixed to "L" during warming-up?
YES
Drive PCB
"L" = 0V
NO
Power Unit (Ballast)
Power Unit (Circuit)
What is the state of TEMP indicator D301?
Blinks
No light
Is E302 (Sensor PCB) securely connected to Drive PCB by the cable?
NO
Connect E302 (Sensor PCB)
YES
Is the voltage at pin ⑧ of L818 on the Drive PCB set to "L" during warming-up?
NO
"L" = 0V
Drive PCB
YES
Power Unit (Ballast)
Measure voltage at the ② of I256 on the Drive PCB.
H (3.3V)
DC FAN
L (0V)
Measure the resistance of TH950 on the Sensor PCB with disconnected E302.
Infinity
Sensor PCB
about 10kΩ
Drive PCB


Picture is not displayed when the RGB signal is input
Check at operating mode
Are these signals present at each pin listed on the Drive PCB?
NO
Change the IS01 on the Signal PCB, is it repaired?
YES
IC (IS01) EL4332CS
NO
Signal PCB
YES
CH106 : R signal
CH102 : G signal
CH104 : B signal
CH112 : H sync
CH113 : V sync
Are these voltages present at each pin listed on the Drive PCB?
NO
Power Unit (Circuit)
I812 ①: +14V
IV22 ①: +17V
I102 ①: +6V
I841 ①: +4.3V
YES
Drive PCB
LCD panel


Picture is not displayed when the VIDEO, S-VIDEO, Component Signal is input
Check at operating mode
Are these voltages present at each pin listed on the Drive PCB?
NO
Power Unit (Circuit)
I812 ①: +14V
IV22 ①: +17V
I102 ①: +6V
I841 ①: +4.3V
YES
Are signals present at each pin listed on IV01 of the the Drive PCB?
NO
Measure the voltage at pin ③ of I102 on the Drive PCB.
0V
Drive PCB
5V
Signal PCB
YES
CHV29 : VIDEO (Composite)
CHV28 : S-VIDEO (Y)
CHV27 : S-VIDEO (C)
CHV34 : Component (Y)
CHV35 : Component (Cb)
CHV36 : Component (Cr)
Drive PCB
LCD module



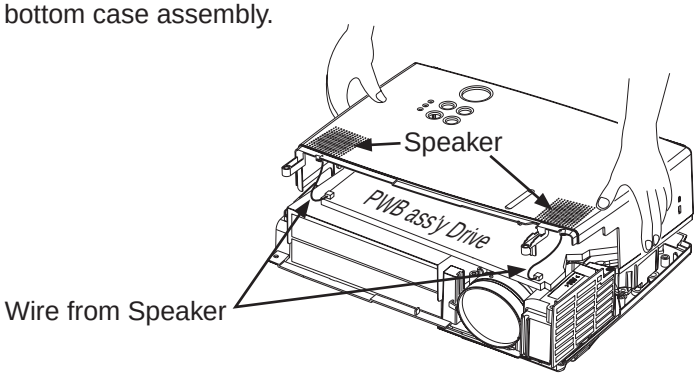


Pin No	RS-232C
1	
2	
3	
6	SEL0
7	RTS
9	
10	GND
12	
13	RDP
14	TDP

6. Service points

● Caution when removing the Upper Case Assembly

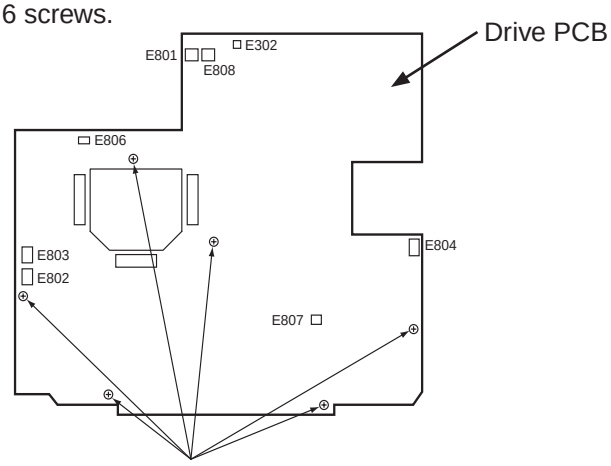
When you remove the Upper Case Assembly, avoid to damage wires between speakers on the upper case and Drive PCB on the bottom case assembly.



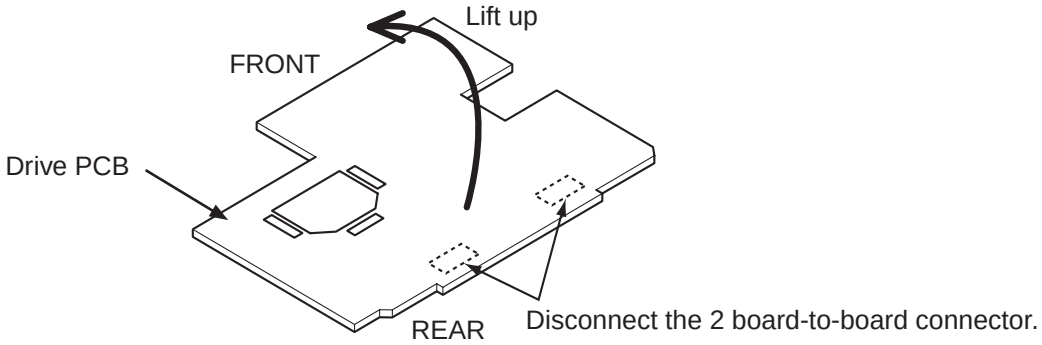
● Caution when removing the Drive PCB

When removing the Drive PCB, there is danger of damaging the connector connecting cables and the Signal PCB.

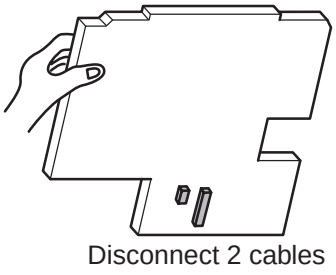
1) Disconnect 10 cables and remove 6 screws.



2) Lift the rear part of the Drive PCB to the front.

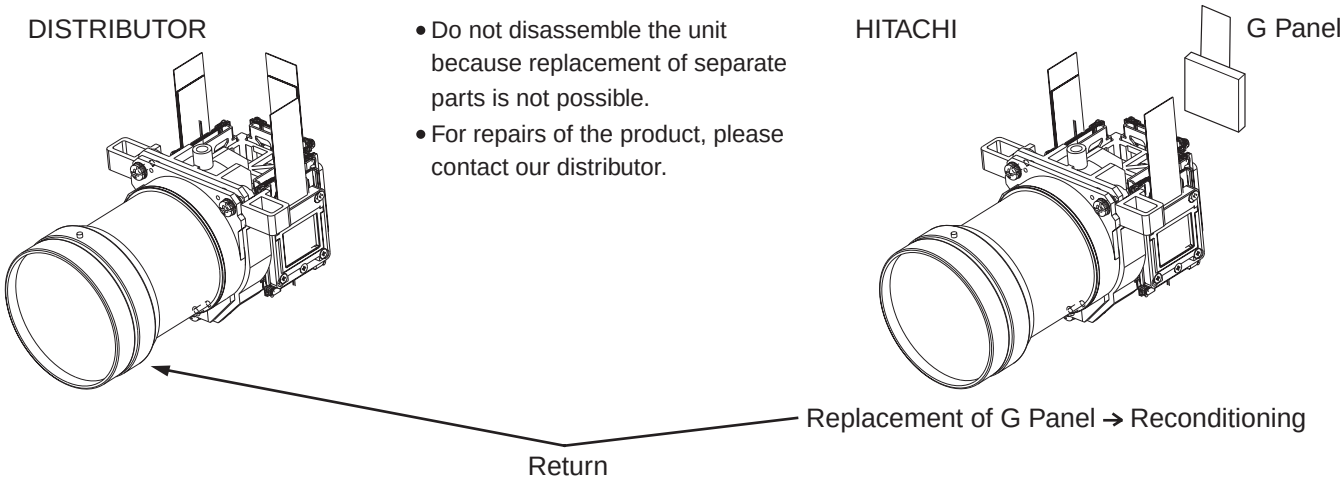


3) Disconnect 2 cables lifting the Drive PCB.



● Before Replacing the LCD / Lens Prism

You should not replace separately the parts of the liquid crystal LCD / Lens Prism because they only work properly when used together. Therefore, regarding these parts, you can either replace the LCD / Lens Prism assembly or send the whole LCD / Lens Prism assembly back to Hitachi, where we will replace the malfunctioning part, recondition the device and send it back to you. Please contact our distributor.


DISTRIBUTOR
• Do not disassemble the unit because replacement of separate parts is not possible.
• For repairs of the product, please contact our distributor.
HITACHI
G Panel
Replacement of G Panel → Reconditioning
Return

● Air Filter

Cleaning the Air filter

The air filter should be cleaned as described below at intervals of approximately 300 hours.

1. Switch the projector power supply OFF, and remove the power cord from the power outlet.
2. Clean the air filter with a vacuum cleaner.

Replacing the Air filter

Replace the air filter if contamination cannot be removed, or if it is damaged.

1. Remove the filter cover.
2. Remove the old filter.
3. Set the new filter and filter cover.

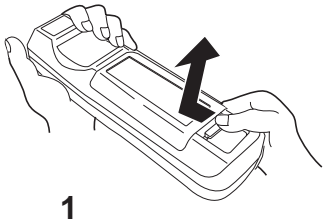
CAUTION

- Switch power OFF and remove the power cord from the power outlet before beginning maintenance work. Please read the separate “SAFETY INSTRUCTIONS” thoroughly to ensure that maintenance is performed correctly.
- Replace the air filter if contamination cannot be removed, or if it is damaged. Contact your dealer in such case. (Option Air filter assembly : MU01421)
- Do not use the equipment with the air filter removed.
- When the air filter is clogged with dust etc. the power supply is switched OFF automatically to prevent the temperature rising inside the projector.

● Loading the Batteries

Install the AA batteries into the remote control transmitter.

1. Remove the battery cover.
   Push the knob while lifting up the battery cover.
2. Loading the batteries.
   Make sure the plus and minus poles are correctly oriented.
3. Close the battery cover.



1 2

CAUTION

- Use only the specified batteries with this remote control transmitter. Also, do not mix new and old batteries. This could cause in battery cracking or leakage, which could result in fire or personal injury.
- When loading the batteries, make sure the plus and minus terminals are correctly oriented as indicated in the remote control transmitter. Incorrect orientation could cause battery cracking or leakage, which could result in personal injury or pollution of the surrounding environment.
- When you dispose the battery, you should obey the law in the relative area or country.
- Keep the battery away from children and pets.
- When not to be used for an extended period, remove the batteries from the Remote control transmitter.

NOTE: Replace the batteries when remote control transmitter operation becomes difficult.

● Lamp (Option Lamp: DT00431 {*CP-X380W*} : DT00432 {*PJ750-2*})

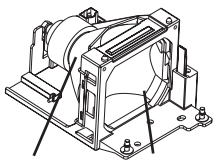
HIGH VOLTAGE
HIGH TEMPERATURE
HIGH PRESSURE

Contact your dealer before replacing the lamp.
Before replacing the lamp, switch power OFF, remove the power cord from the power outlet, and wait approximately 45 minutes until the lamp has cooled. The lamp may explode if handled at high temperatures.

WARNING

- For disposal of used lamp, treat according to the instruction of community authorities.
- Since the lamp is made of glass, do not apply shock to it and do not scratch it.
- Also, do not use old lamp. This could also cause explosion of the lamp.
- Premature lamp failure MAY be caused by an electronic component in the projector and not necessarily the lamp. If unsure contact your local service centre.
- If it is probable that the lamp has exploded (explosive sound is heard), disconnect the power plug from the power outlet and ask your dealer to replace lamp. The lamp is covered by front glass, but in rare cases, the reflector and the inside of the projector may be damaged by scattered broken pieces of glass, and broken pieces could cause injury when being handled.
- Do not use the projector with the lamp cover removed.

Lamp



Reflector Front glass

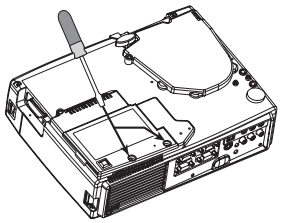
Lamp Life

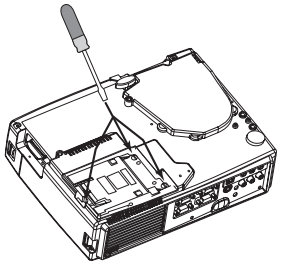
Projector lamps have a finite life. The image will become darker, and hues will become weaker, after a lamp has been used for a long period of time.
Replace the lamp if the LAMP indicator is red, or the CHANGE THE LAMP message appears when the projector is switched ON.

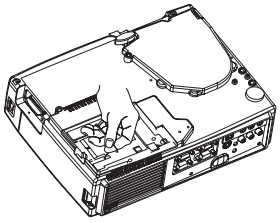
NOTE: The LAMP indicator is also red when the lamp unit reaches high temperature. Before replacing the lamp, switch power OFF, wait approximately 20 minutes, and switch power ON again.
If the LAMP indicator is still red, replace the lamp.

Replacing the Lamp

1. Switch the projector OFF, remove the power cord from the power outlet, and wait at least 45 minutes for the unit to cool.
2. Prepare a new lamp.
3. Check that the projector has cooled sufficiently, and gently turn it upside down.
4. Loosen the two screws as shown in the diagram, and remove the lamp cover.
5. Loosen the three screws, and gently remove the lamp while holding the grips. Touching the inside of the lamp case may result in uneven colouring.
6. Install the new lamp and tighten the three screws firmly.
   Also steadily push the opposite side of the screwed lamp into the unit.
7. Replace the lamp cover in position and tighten the two screws firmly.
8. Gently turn the projector right-side up.







CAUTION

- Ensure that screws are tightened properly. Screws not tightened fully may result in injury or accidents.
- Do not use the projector with the lamp cover removed.

Resetting the Lamp Timer

Reset the lamp timer after replacing the lamp. When the lamp has been replaced after the “THE POWER WILL TURN OFF AFTER 0 Hr” message is displayed, complete the following operation within ten minutes of switching power ON. The power will be turned off automatically in over 10 minutes.

1. Switch power ON, and press the RESET button, for approximately three seconds. The ‘LAMP xxxx hr’ message will appear on the lamp timer on the bottom of the screen.
2. Press the MENU button on the remote control transmitter, or the RESET button on the control panel, while the lamp timer is displayed. The ‘LAMP xxxx □ → 0 ■ CANCEL’ message will then appear.
3. Press the ◄ and select 0, and wait until the timer display is cleared.

NOTE: Do not reset the lamp timer without replacing the lamp. Reset the lamp timer always when replacing the lamp. The message functions will not operate properly if the lamp timer is not reset correctly.

Message table

On-screen display

The following messages are displayed on the screen.

"CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER"	Lamp has 1,700 hours on it and may need to be changed.
"CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER" "THE POWER WILL TURN OFF AFTER 20 Hr."	Lamp has 1,979 hours on it. See "Reset the lamp timer"
Blinking of "CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER" "THE POWER WILL TURN OFF AFTER 0 Hr."	When the lamp has 2,000 hours or more on it, the message will blink, and the power will turns off after 10 minutes.
"NO INPUT IS DETECTED"	Signal is not in.
"SYNC IS OUT OF RANGE"	The horizontal or vertical frequency of the input signal exceeds the range of the projector, it cannot be displayed.
"CHECK THE AIR FLOW"	Please remove the obstruction before the suction port.

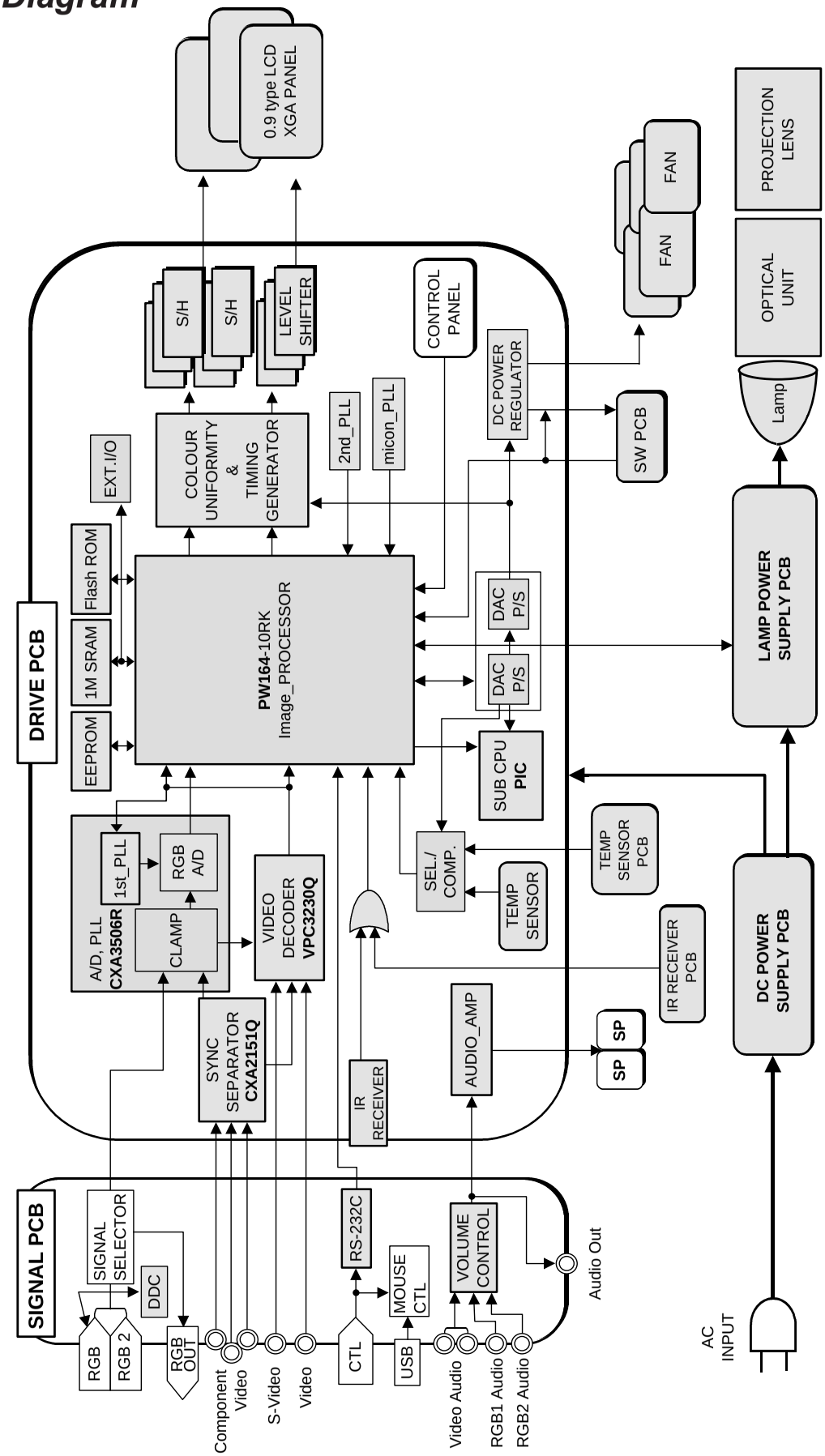
Indicator display

The ON indicator, LAMP indicator and TEMP indicator will light or blink in the following cases.

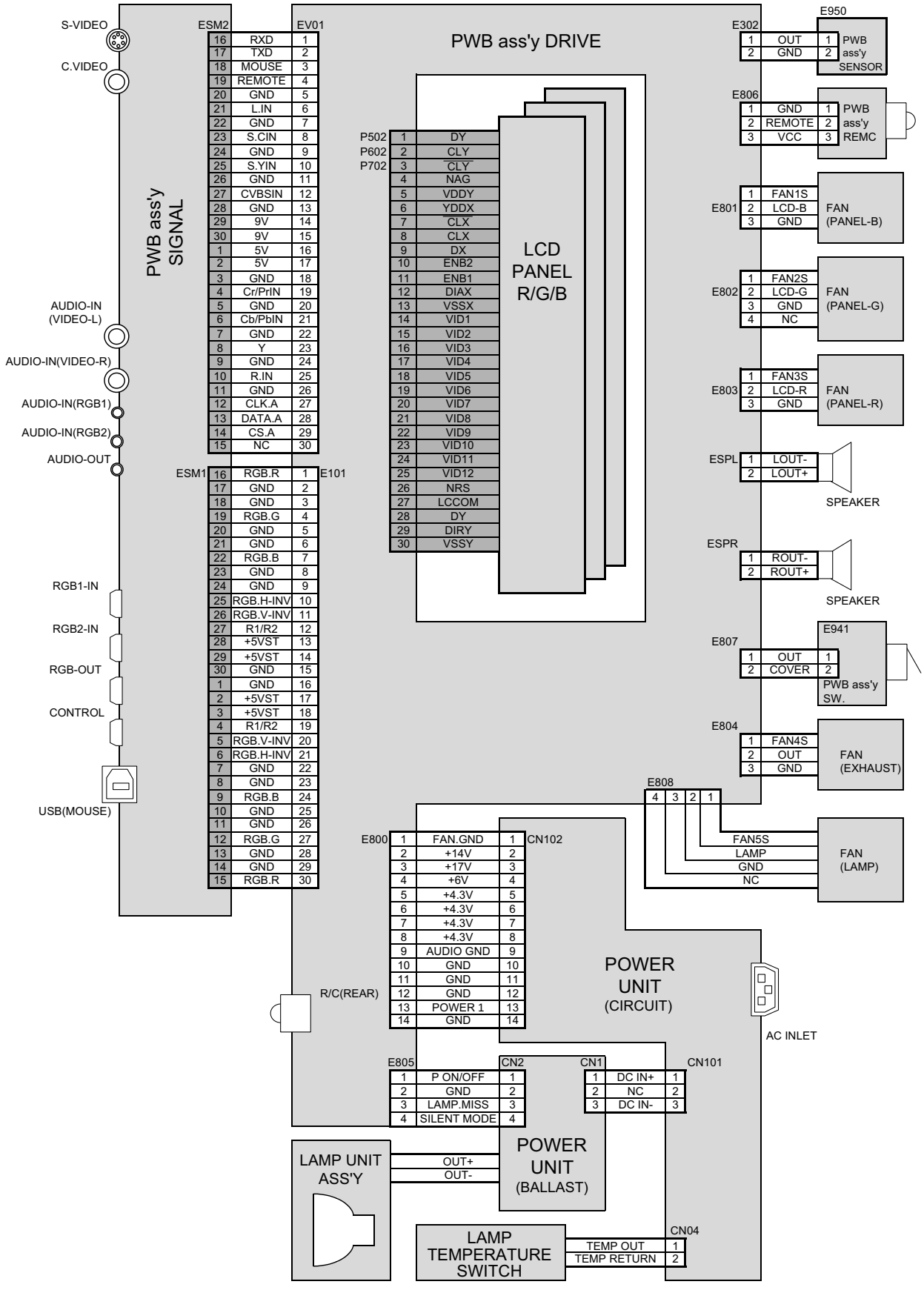
ON indicator	LAMP indicator	TEMP indicator	Meaning	Remedy
Lights orange	Goes off	Goes off	Standby mode	————
Blinks green	Goes off	Goes off	During warming up	————
Lights green	Goes off	Goes off	During operation	————
Blinks orange	Goes off	Goes off	During cooling down	————
Lights red	Lights red	Goes off	Lamp cannot light	Cool projector by power off for 20 minutes. If the indicator is still lit, lamp may be defective. Replace.
Lights red	Blinks red	Goes off	Lamp is not inserted or Lamp cover is open	Securely insert the lamp or shut the lamp door.
Lights red	Goes off	Blinks red	Cooling fan accidented or SENSOR PCB damaged.	Replace fan, SENSOR PCB or connect CNTH.
Lights red	Goes off	Lights red	Inside temperature becomes high	Please remove the obstruction before the suction port.

When inside temperature becomes high, to protect the projector, the lamp may be turned off and the lamp indicator lights red, or the projector will be shut down and the all indicator display goes off.

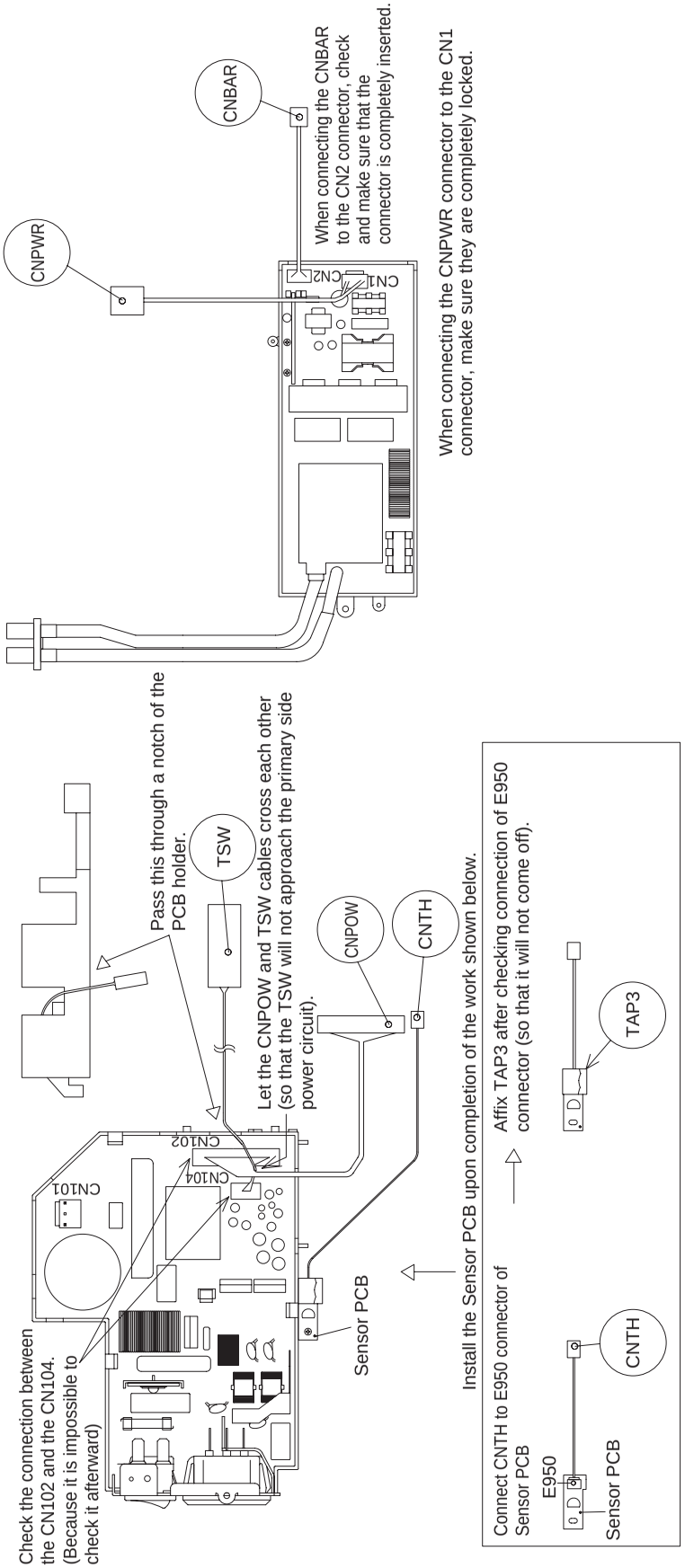
7. Block Diagram



8. Connector Connection Diagram

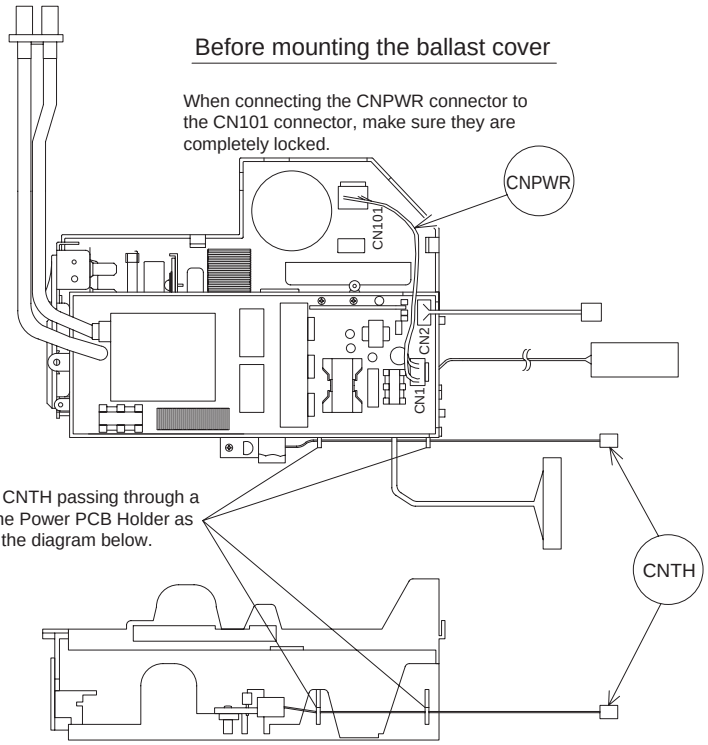


9. Wiring Diagram


CNBAR
When connecting the CNBAR to the CN2 connector, check and make sure that the connector is completely inserted.
CNPWR
CN2
CN1
When connecting the CNPWR connector to the CN1 connector, make sure they are completely locked.
Pass this through a notch of the PCB holder.
TSW
Let the CNPOW and TSW cables cross each other (so that the TSW will not approach the primary side power circuit).
CNPOW
CNTH
CN102
CN104
CN101
Check the connection between the CN102 and the CN104. (Because it is impossible to check it afterward)
Sensor PCB
Install the Sensor PCB upon completion of the work shown below.
Connect CNTH to E950 connector of Sensor PCB
E950
Sensor PCB
CNTH
Affix TAP3 after checking connection of E950 connector (so that it will not come off).
TAP3

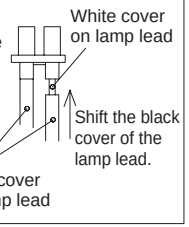
Before mounting the ballast cover

When connecting the CNPWR connector to the CN101 connector, make sure they are completely locked.

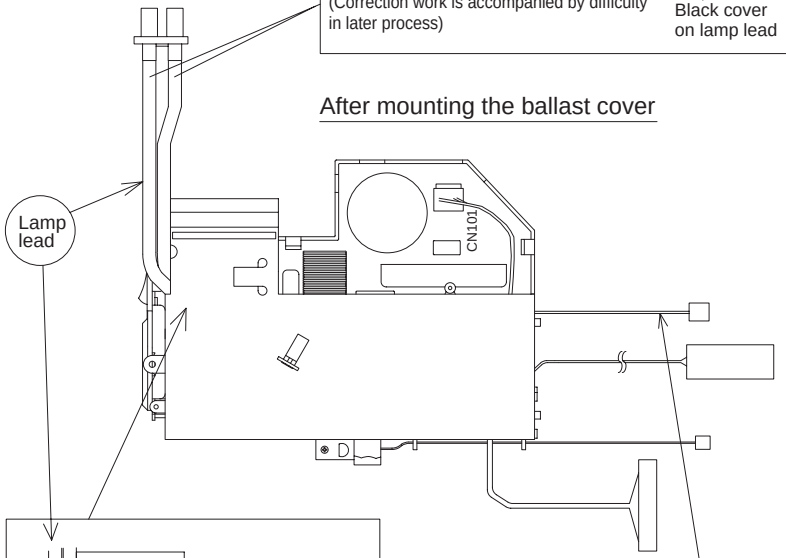


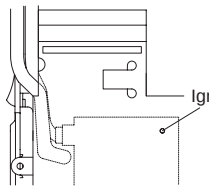
Keep the CNTH passing through a hook of the Power PCB Holder as shown in the diagram below.

Check that the black cover of a lamp lead is securely inserted into the connector.
If even a trivial portion of the white cover is visible inside in a state where the black cover is not inserted into the connector as shown in the diagram on the right, shift the black cover appropriately and insert it into the connector.
(Ascertain double coating to ensure safety standard)
(Correction work is accompanied by difficulty in later process)

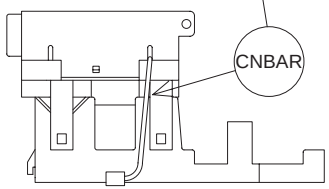


After mounting the ballast cover

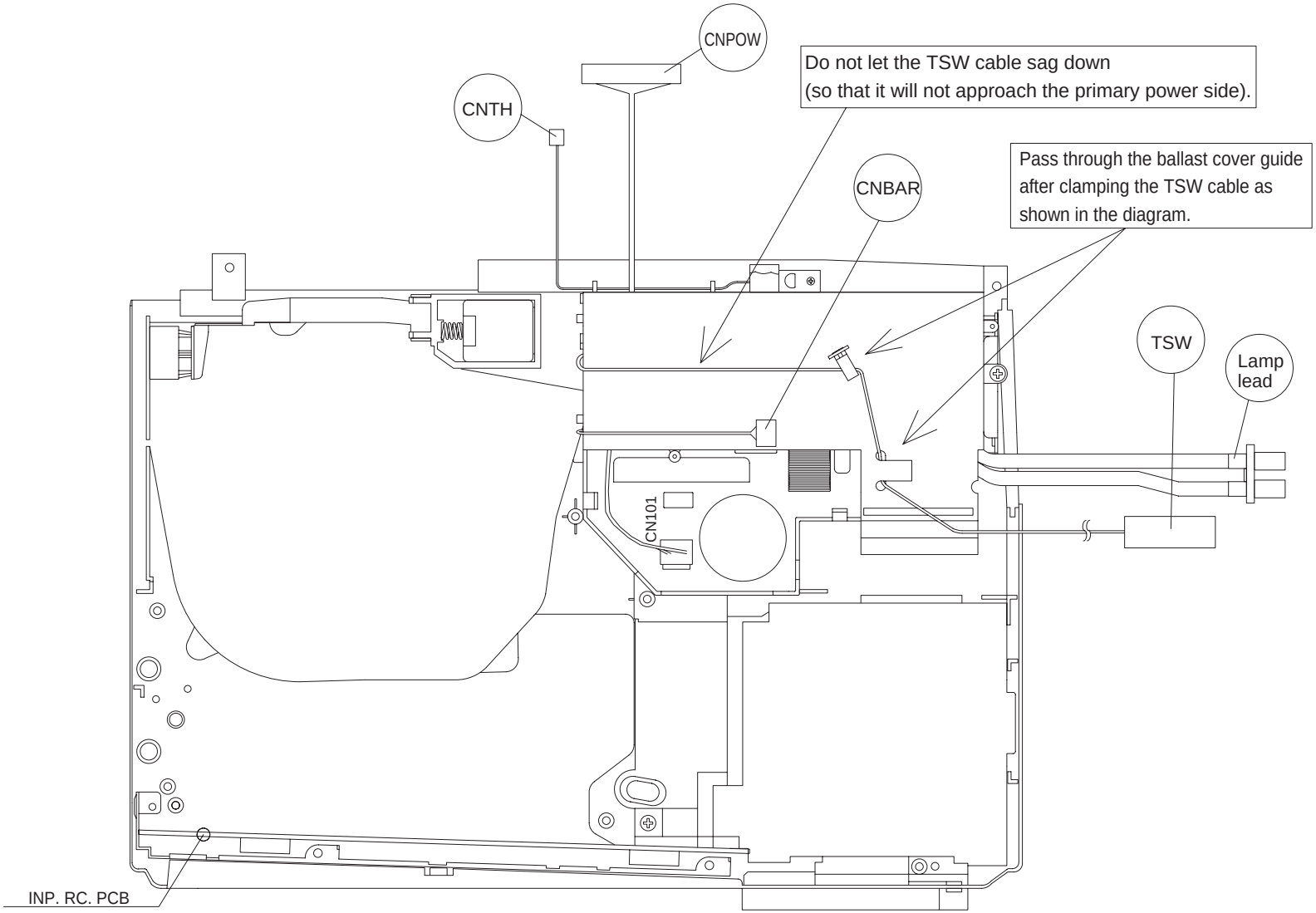




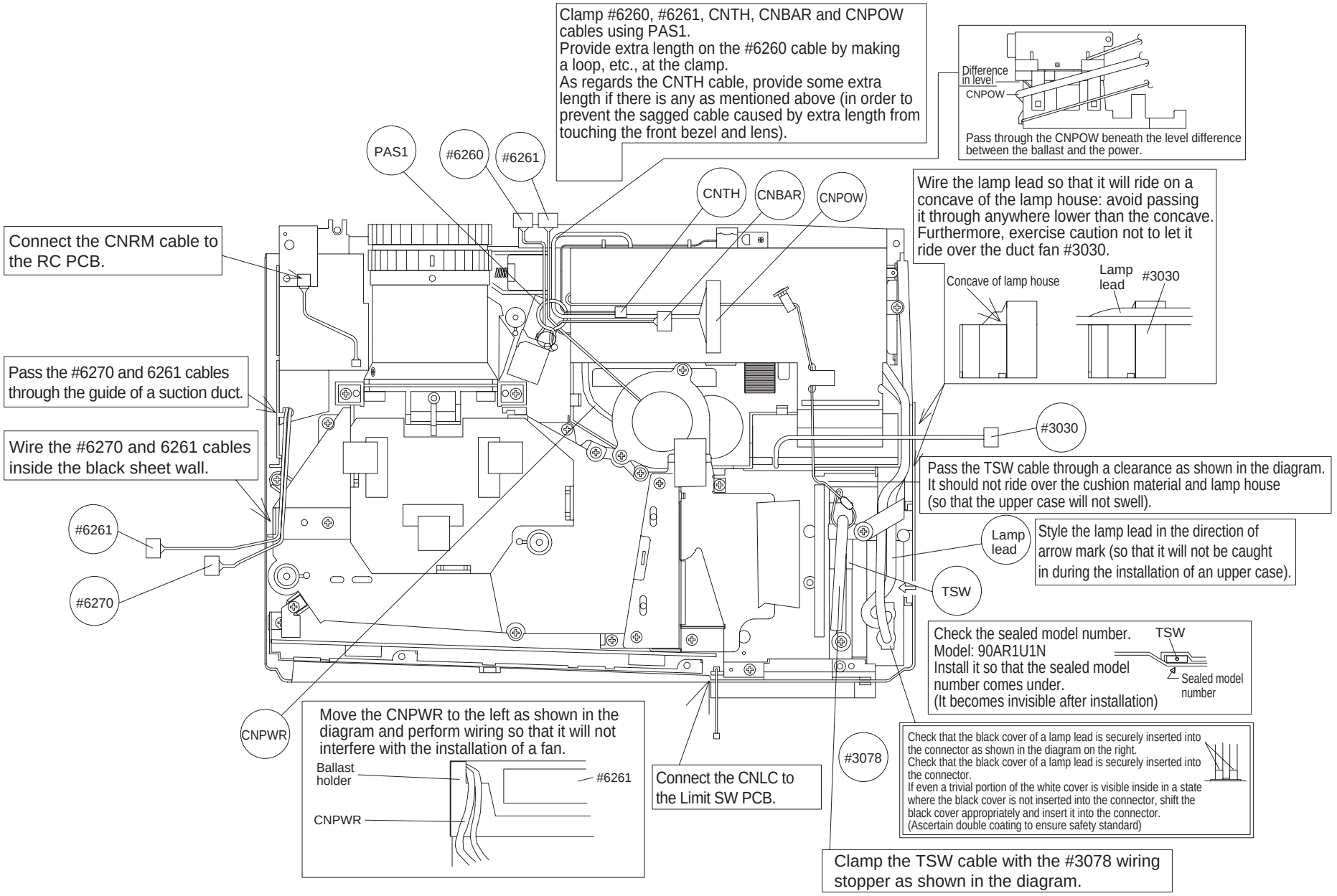
Style the lamp lead as shown in the diagram. At the time, be careful not to let the lead ride on the igniter box. (Because if it rides on the box, it becomes impossible to install the ballast cover)



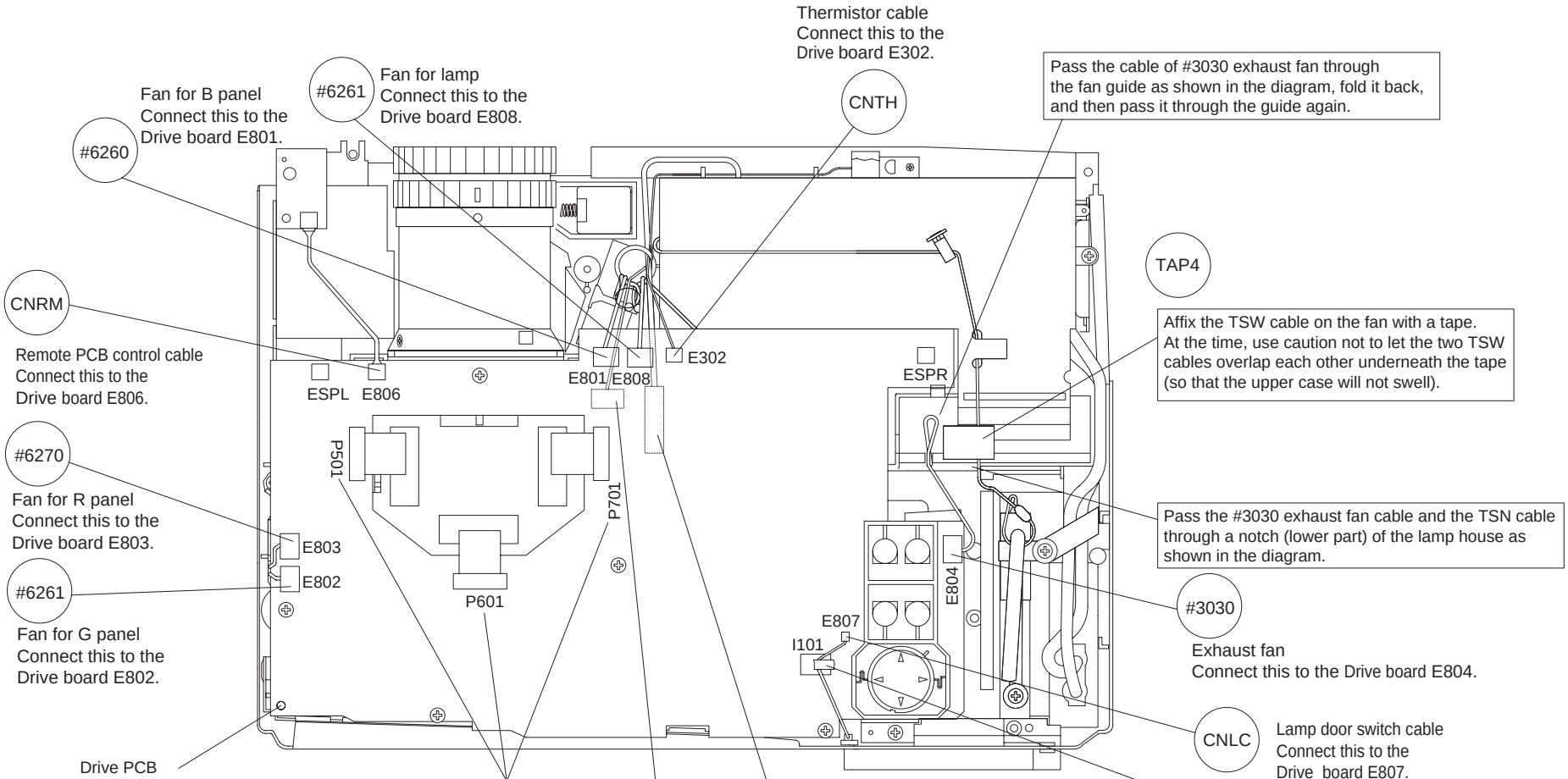
Make sure - as shown in the diagram - that the CNBAR is passed through a notch on the ballast cover.

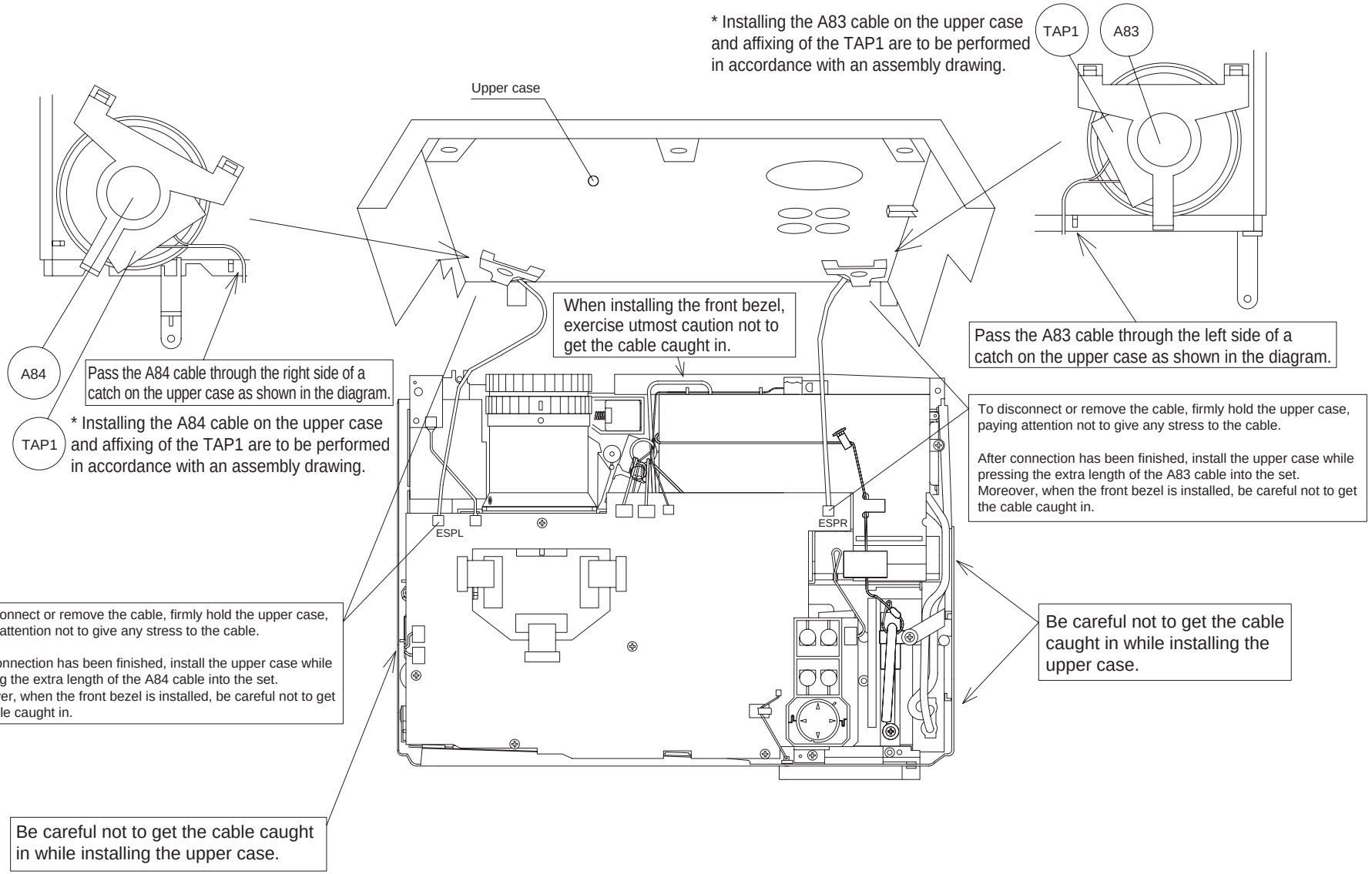


Keep individual cables away from positions to mount optical units as shown in the diagram so that the cables will not be caught in when optical units are mounted.


Clamp #6260, #6261, CNTH, CNBAR and CNPOW cables using PAS1.
Provide extra length on the #6260 cable by making a loop, etc., at the clamp.
As regards the CNTH cable, provide some extra length if there is any as mentioned above (in order to prevent the sagged cable caused by extra length from touching the front bezel and lens).
Difference in level
CNPOW
Pass through the CNPOW beneath the level difference between the ballast and the power.
PAS1
#6260
#6261
CNTH
CNBAR
CNPOW
Wire the lamp lead so that it will ride on a concave of the lamp house: avoid passing it through anywhere lower than the concave. Furthermore, exercise caution not to let it ride over the duct fan #3030.
Concave of lamp house
Lamp lead
#3030
Connect the CNRM cable to the RC PCB.
Pass the #6270 and 6261 cables through the guide of a suction duct.
Wire the #6270 and 6261 cables inside the black sheet wall.
#6261
#6270
#3030
Pass the TSW cable through a clearance as shown in the diagram. It should not ride over the cushion material and lamp house (so that the upper case will not swell).
Lamp lead
Style the lamp lead in the direction of arrow mark (so that it will not be caught in during the installation of an upper case).
TSW
Check the sealed model number.
Model: 90AR1U1N
Install it so that the sealed model number comes under.
(It becomes invisible after installation)
TSW
Sealed model number
CNPWR
Move the CNPWR to the left as shown in the diagram and perform wiring so that it will not interfere with the installation of a fan.
Ballast holder
#6261
CNPWR
Connect the CNLC to the Limit SW PCB.
#3078
Check that the black cover of a lamp lead is securely inserted into the connector as shown in the diagram on the right.
Check that the black cover of a lamp lead is securely inserted into the connector.
If even a trivial portion of the white cover is visible inside in a state where the black cover is not inserted into the connector, shift the black cover appropriately and insert it into the connector.
(Ascertain double coating to ensure safety standard)
Clamp the TSW cable with the #3078 wiring stopper as shown in the diagram.

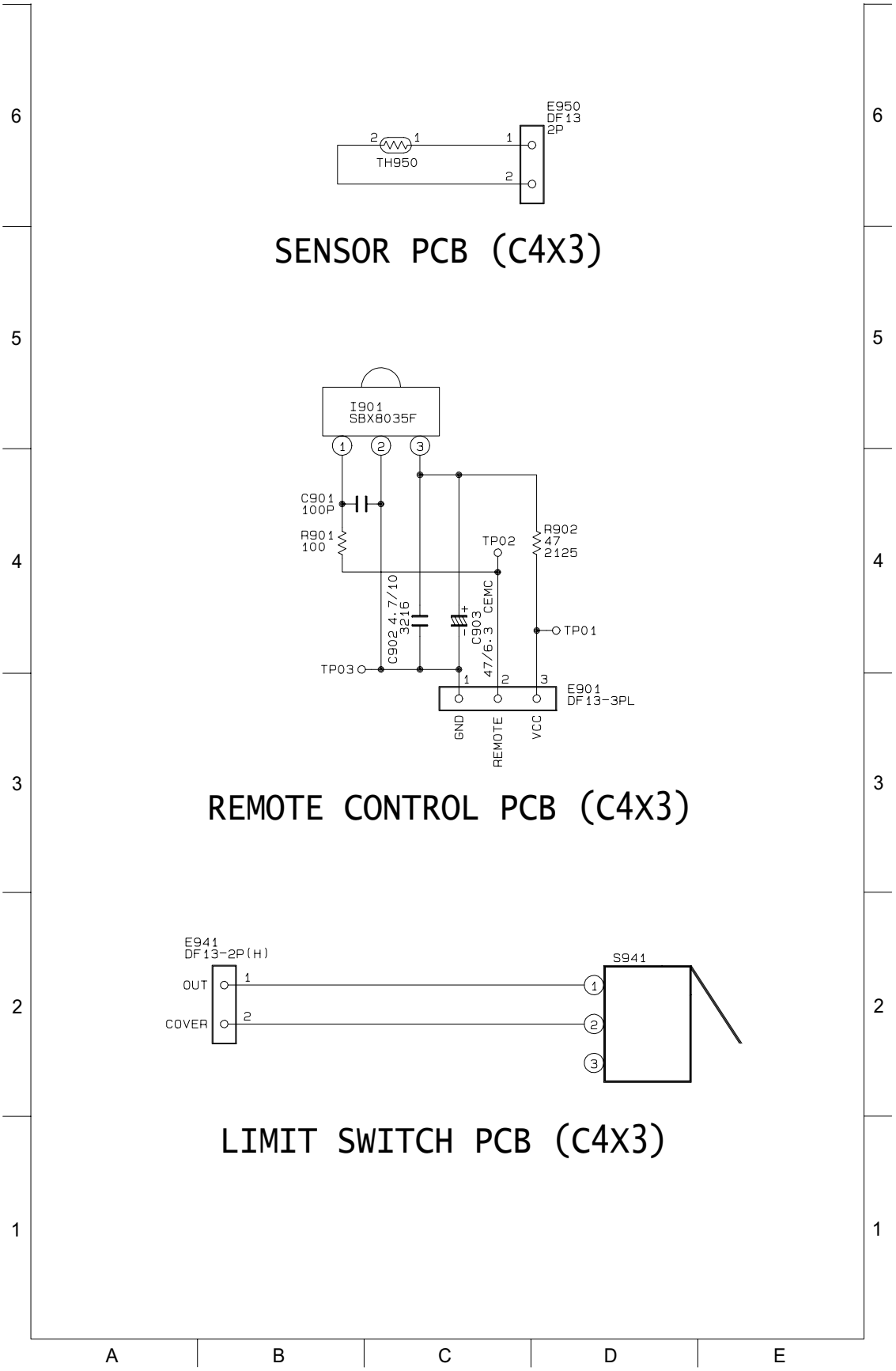
Procedures
Before mounting the Drive PCB, connect the CNBAR and the CNPOW to a connector on the back of the PCB in a state where you hold the Drive PCB with your hands.
Connect the other cables in a state where the Drive board is mounted.

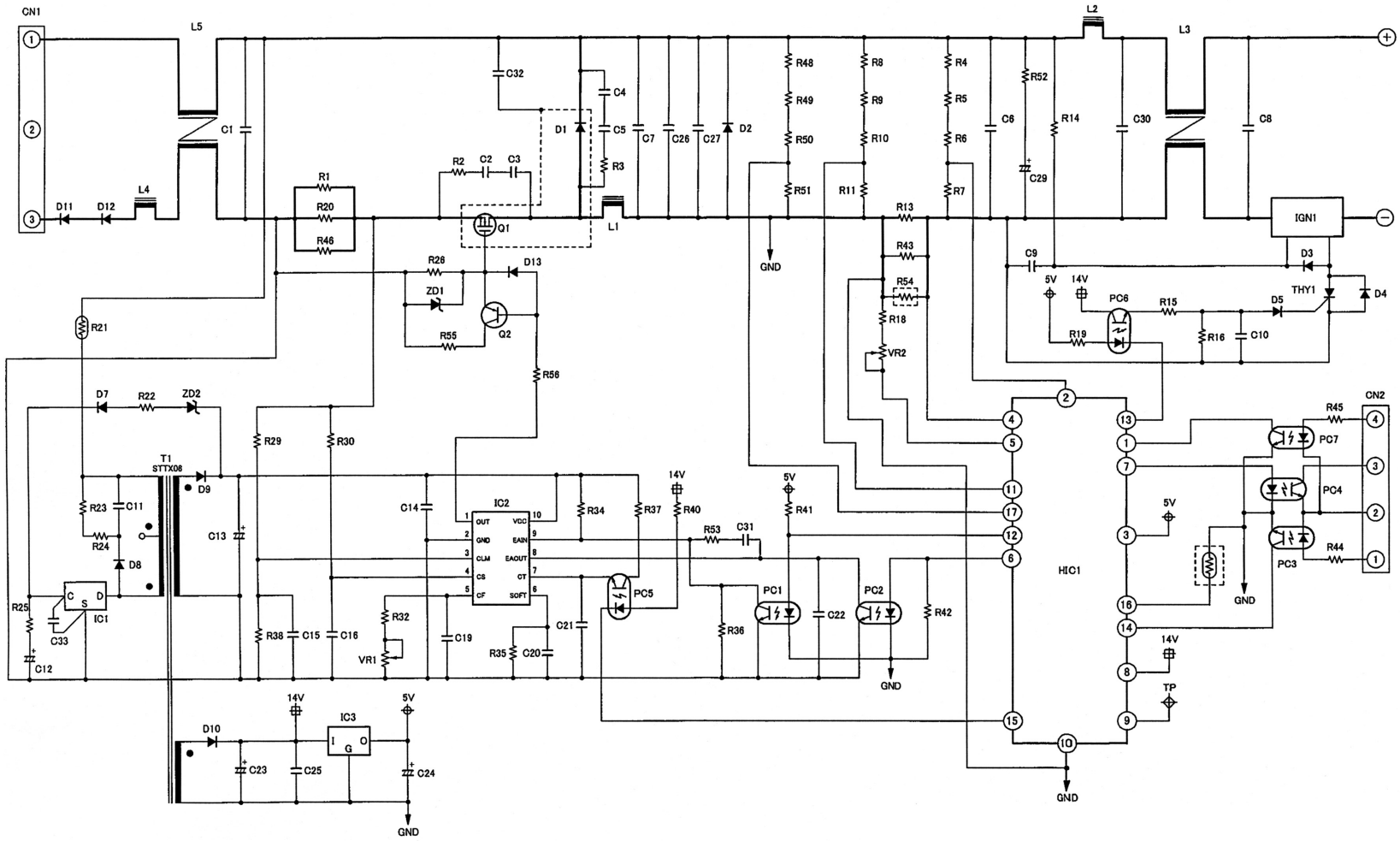

Thermistor cable
Connect this to the
Drive board E302.
CNTH
#6261
Fan for lamp
Connect this to the
Drive board E808.
Fan for B panel
Connect this to the
Drive board E801.
#6260
Pass the cable of #3030 exhaust fan through the fan guide as shown in the diagram, fold it back, and then pass it through the guide again.
TAP4
CNRM
Remote PCB control cable
Connect this to the
Drive board E806.
ESPL
E806
E801
E808
E302
ESPR
Affix the TSW cable on the fan with a tape.
At the time, use caution not to let the two TSW cables overlap each other underneath the tape (so that the upper case will not swell).
#6270
Fan for R panel
Connect this to the
Drive board E803.
P501
P701
E803
E802
P601
Pass the #3030 exhaust fan cable and the TSN cable through a notch (lower part) of the lamp house as shown in the diagram.
E804
#6261
Fan for G panel
Connect this to the
Drive board E802.
E807
I101
#3030
Exhaust fan
Connect this to the Drive board E804.
CNLC
Lamp door switch cable
Connect this to the
Drive board E807.
Drive PCB
TAP2
Use a tape and temporarily stop the sag of CNLC on I101 of the Drive PCB (so that it will not be caught in while the upper case is installed).
CNBAR
CNPOW
Power unit (Circuit) cable
Connect this to the
Drive board E800.
Ballast control wire cable
Connect this to the
Drive board E805.
Connect the panel flexible cable to the flexible connector.
To R: P501 To G: P601 To B: P701
① Pull the hinge out in the direction of arrow mark.
② Insert the flexible cable beneath the hinge.
③ Press in the hinge in the direction of arrow mark.
Hinge
Flexible cable


* Installing the A83 cable on the upper case and affixing of the TAP1 are to be performed in accordance with an assembly drawing.
TAP1
A83
Upper case
When installing the front bezel, exercise utmost caution not to get the cable caught in.
Pass the A83 cable through the left side of a catch on the upper case as shown in the diagram.
A84
Pass the A84 cable through the right side of a catch on the upper case as shown in the diagram.
TAP1
* Installing the A84 cable on the upper case and affixing of the TAP1 are to be performed in accordance with an assembly drawing.
To disconnect or remove the cable, firmly hold the upper case, paying attention not to give any stress to the cable.
After connection has been finished, install the upper case while pressing the extra length of the A83 cable into the set.
Moreover, when the front bezel is installed, be careful not to get the cable caught in.
ESPL
ESPR
To disconnect or remove the cable, firmly hold the upper case, paying attention not to give any stress to the cable.
After connection has been finished, install the upper case while pressing the extra length of the A84 cable into the set.
Moreover, when the front bezel is installed, be careful not to get the cable caught in.
Be careful not to get the cable caught in while installing the upper case.
Be careful not to get the cable caught in while installing the upper case.

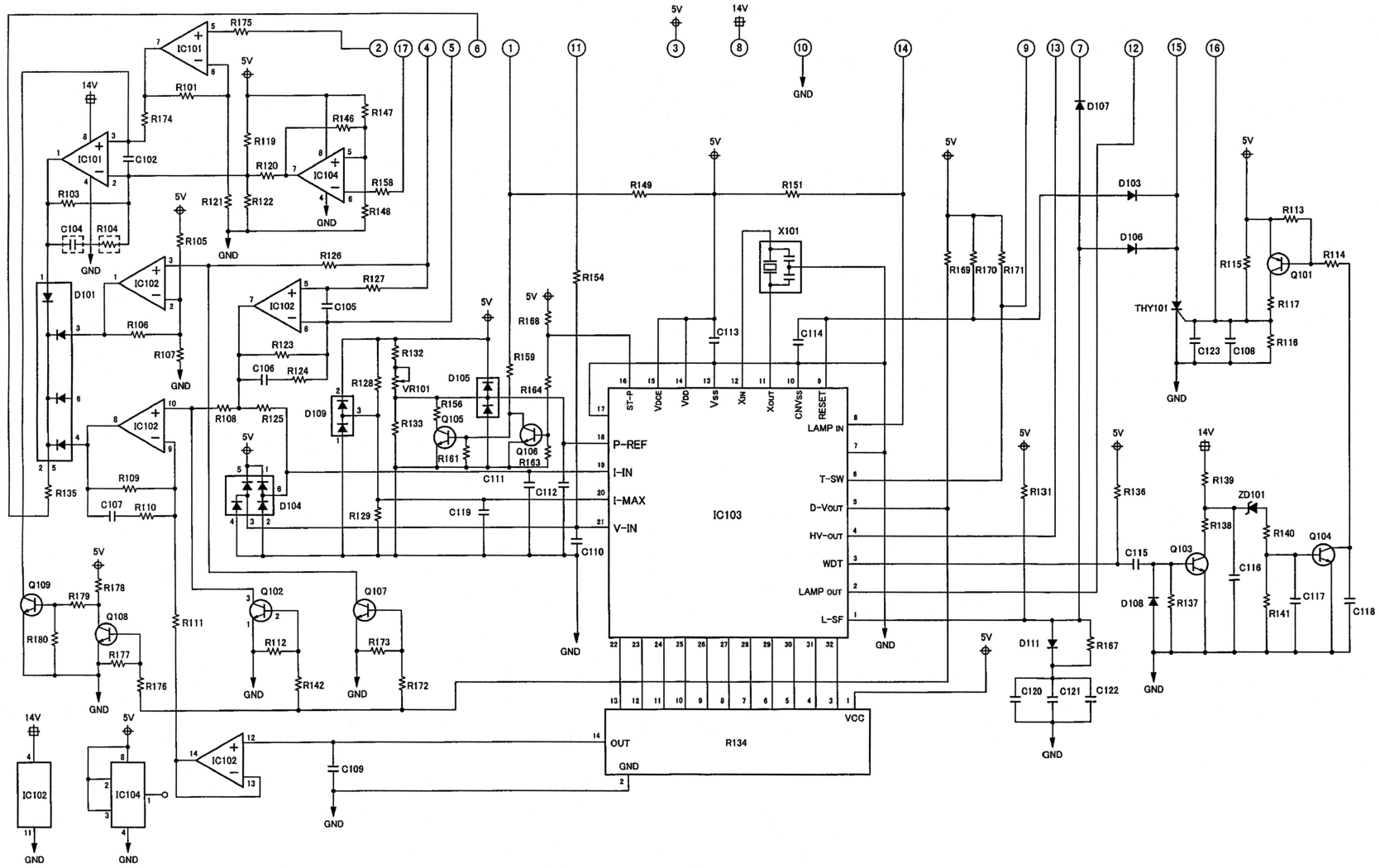
10. Basic Circuit Diagram

Parts with hatching are not mounted

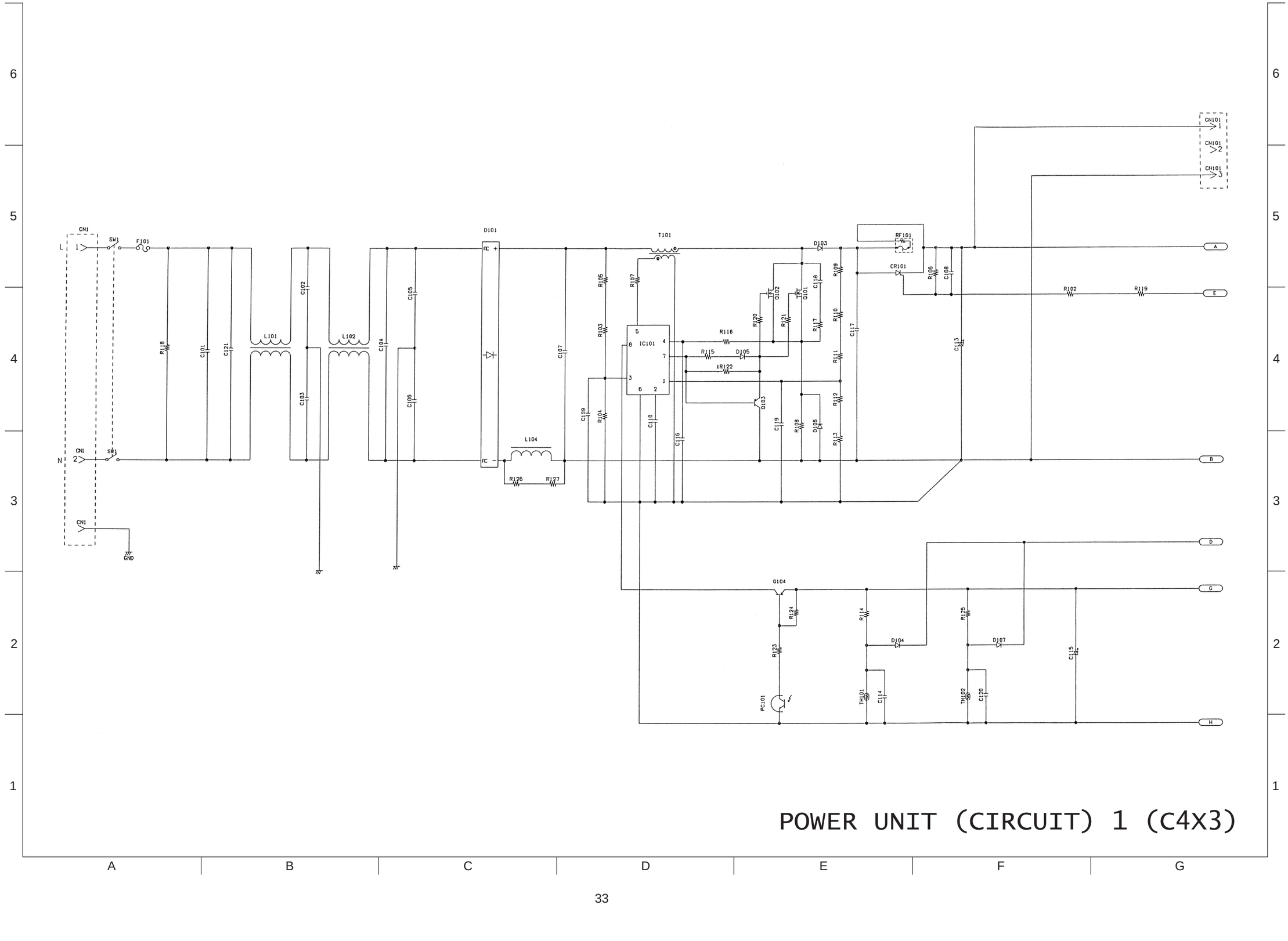




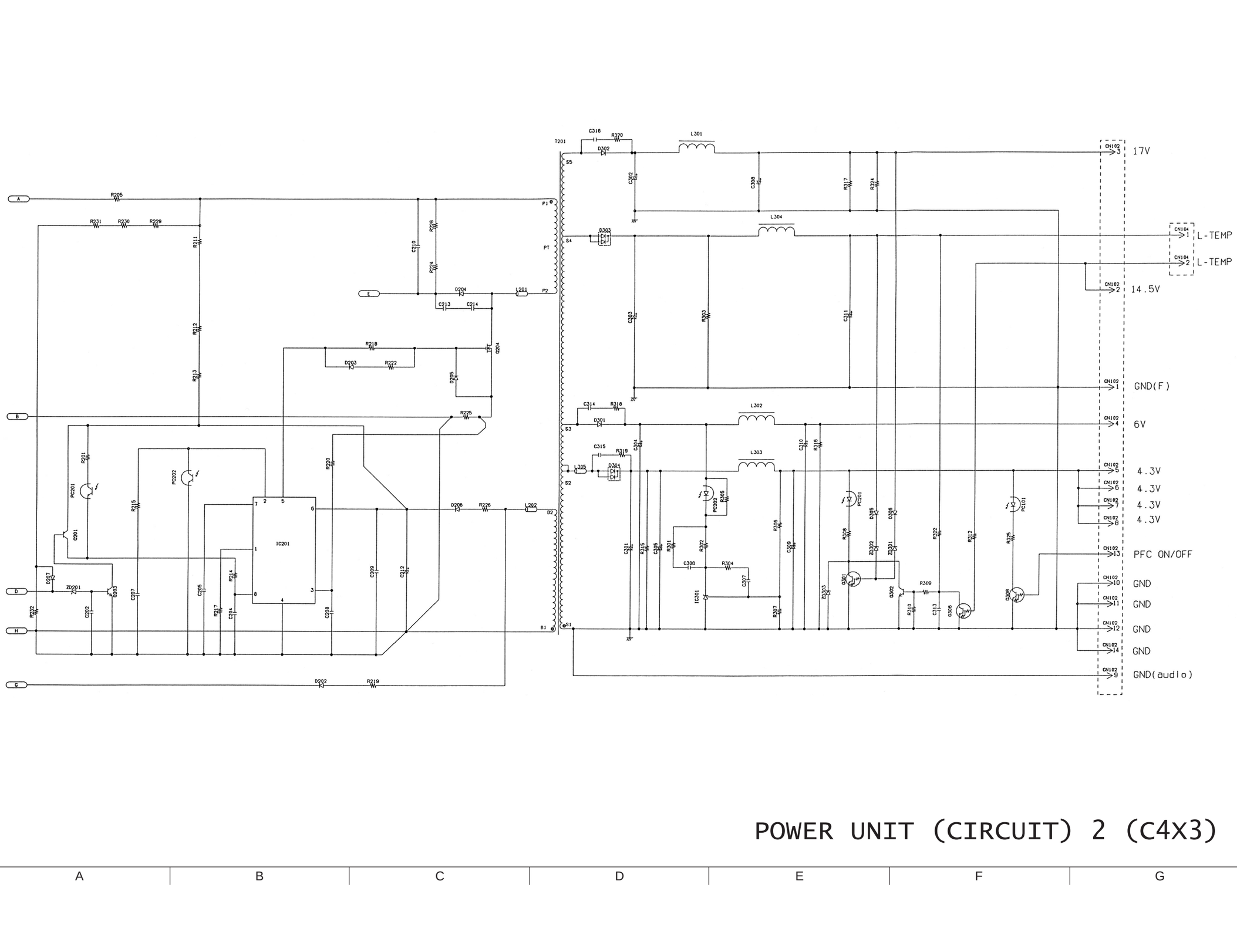
POWER UNIT (BALLAST) 1 (C4X3)



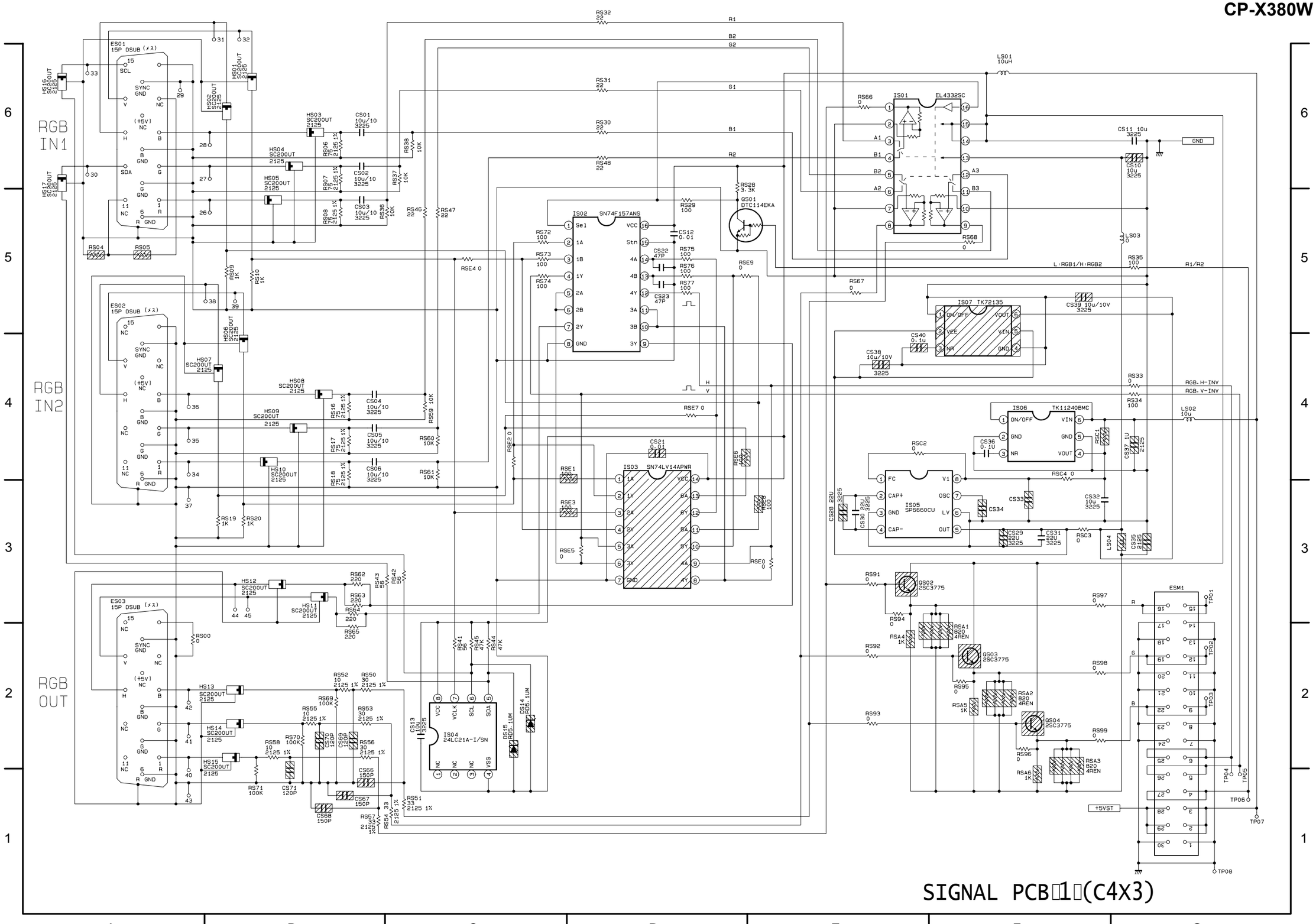
POWER UNIT (BALLAST) 2 (C4X3)

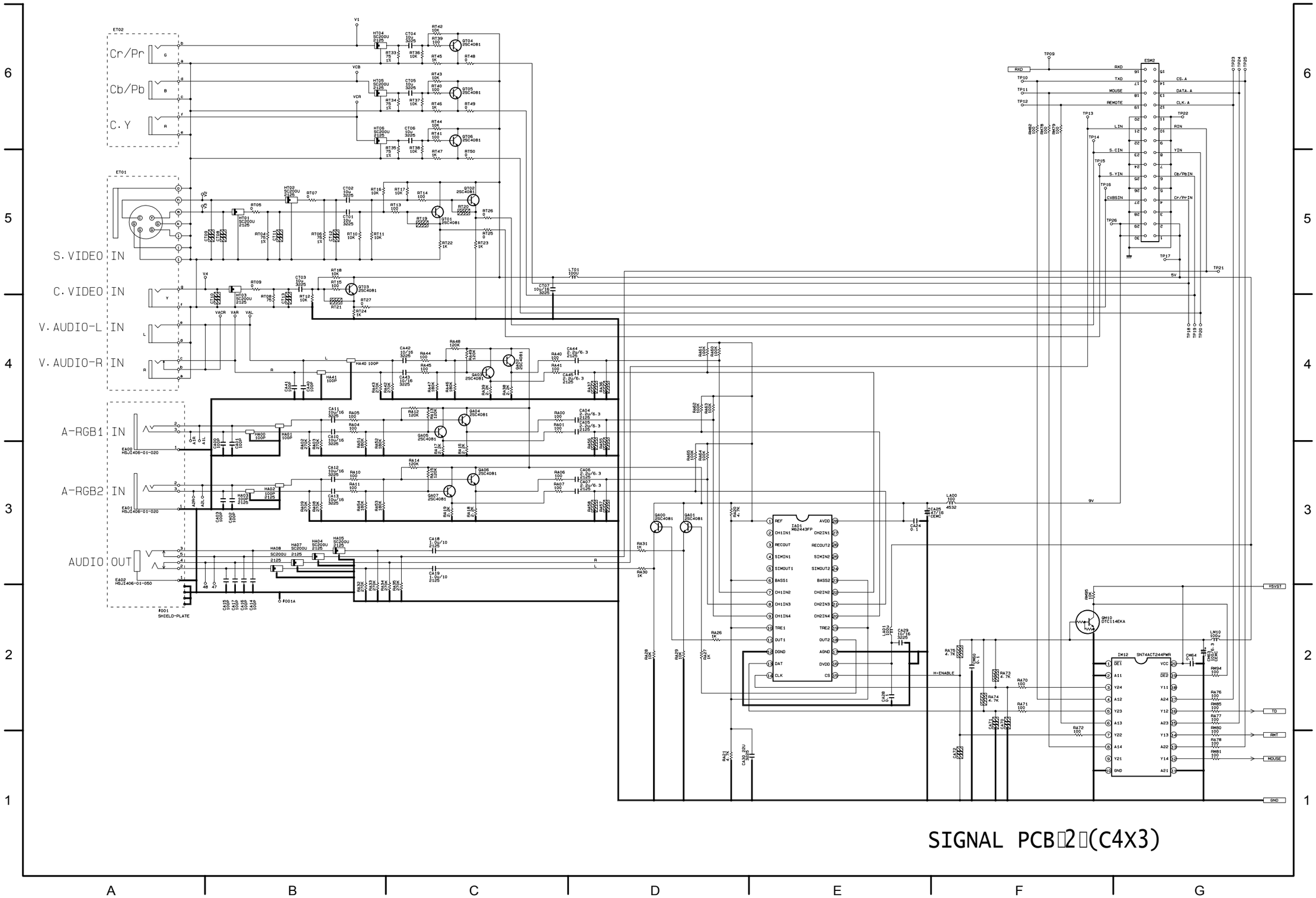


POWER UNIT (CIRCUIT) 1 (C4X3)



POWER UNIT (CIRCUIT) 2 (C4X3)

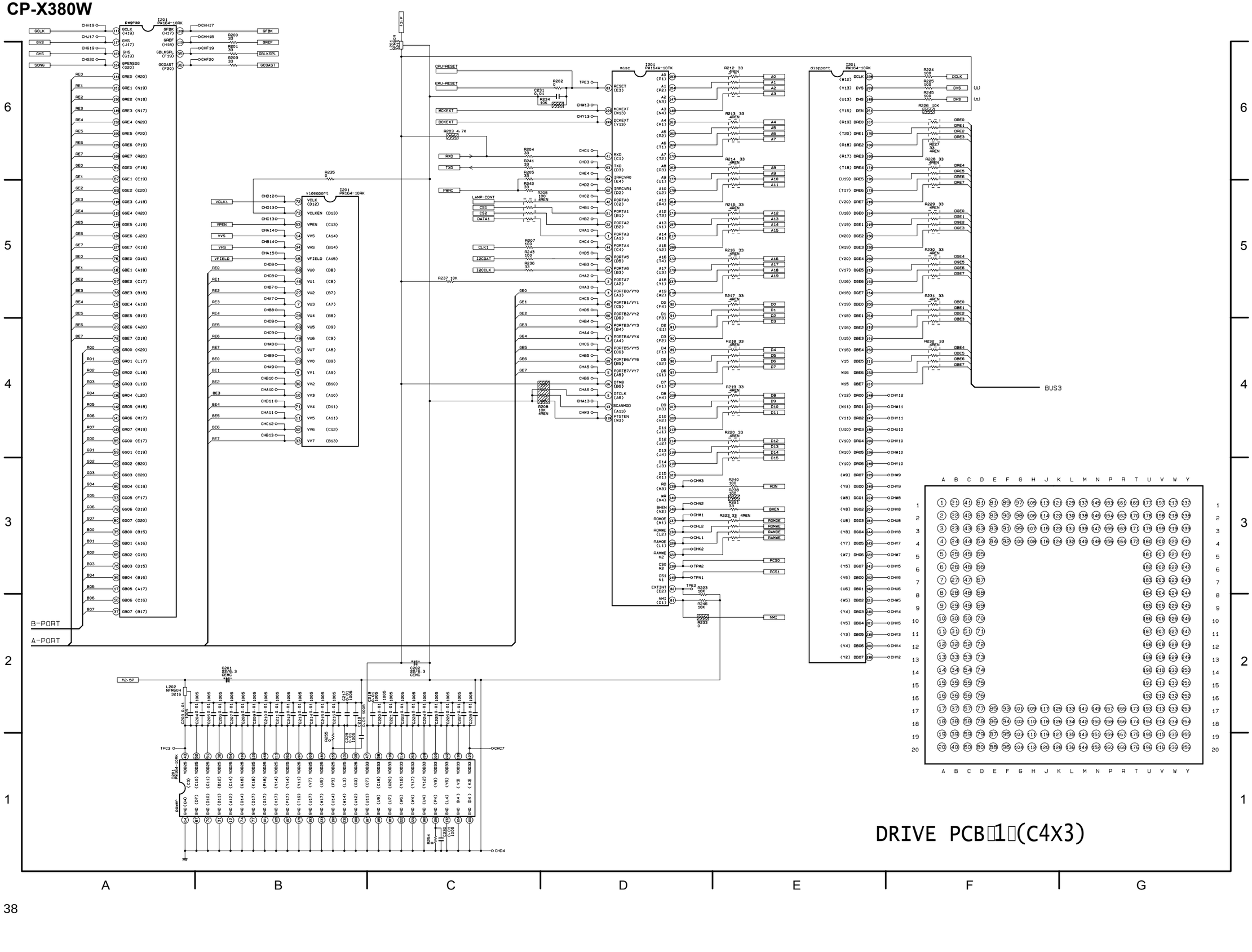

RGB IN1
RGB IN2
RGB OUT
ES01 15P DSUB (メス)
ES02 15P DSUB (メス)
ES03 15P DSUB (メス)
IS01 EL4332SC
IS02 SN74F157ANS
IS03 SN74LV14APWR
IS04 24LC21A-I/SN
IS05 SP6660CU
IS06 TK11240BMC
IS07 TK72135
QS01 DTC114EKA
QS02 2SC3775
QS03 2SC3775
QS04 2SC3775
ESM1
LS01 10uH
LS02 10u
LS03 0
LS04
GND
H
V
L:RGB1/H:RGB2
R1/R2
RGB.H-INV
RGB.V-INV
+5VST
SIGNAL PCB□1□(C4X3)



SIGNAL PCB□2□(C4X3)

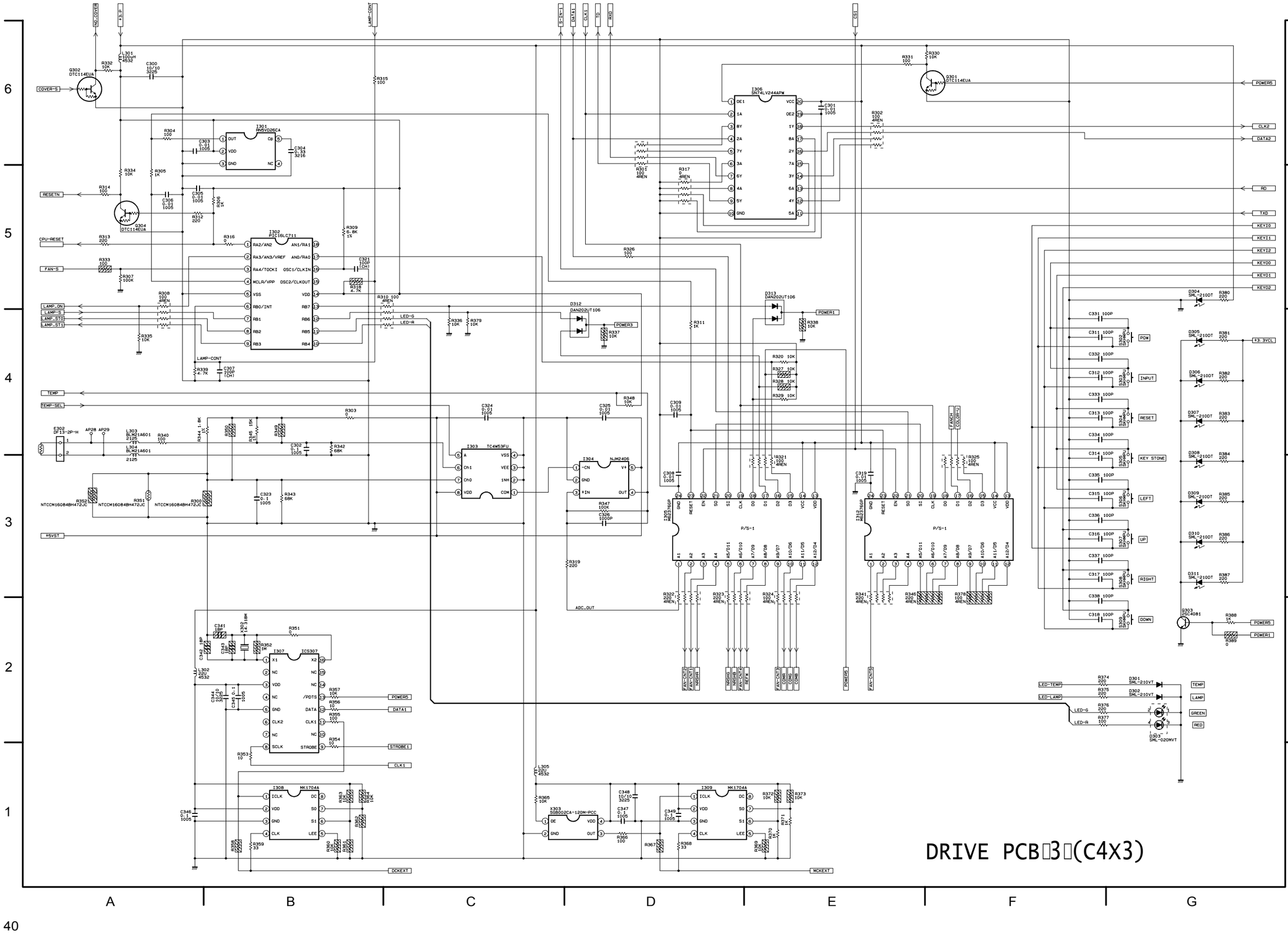
SIGNAL PCB□3□(C4X3)

PJ750-2
CP-X380W



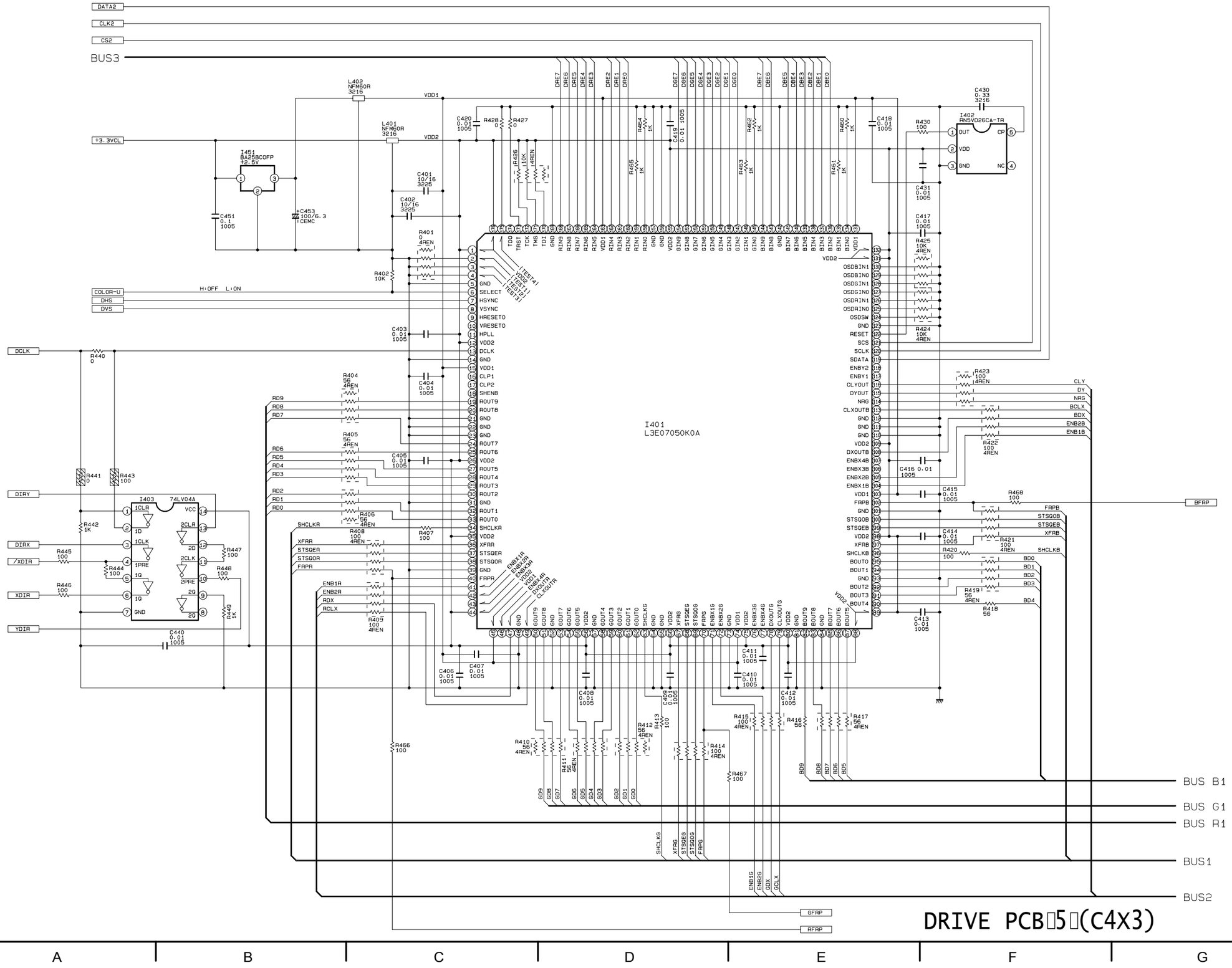
DRIVE PCB□2□(C4X3)

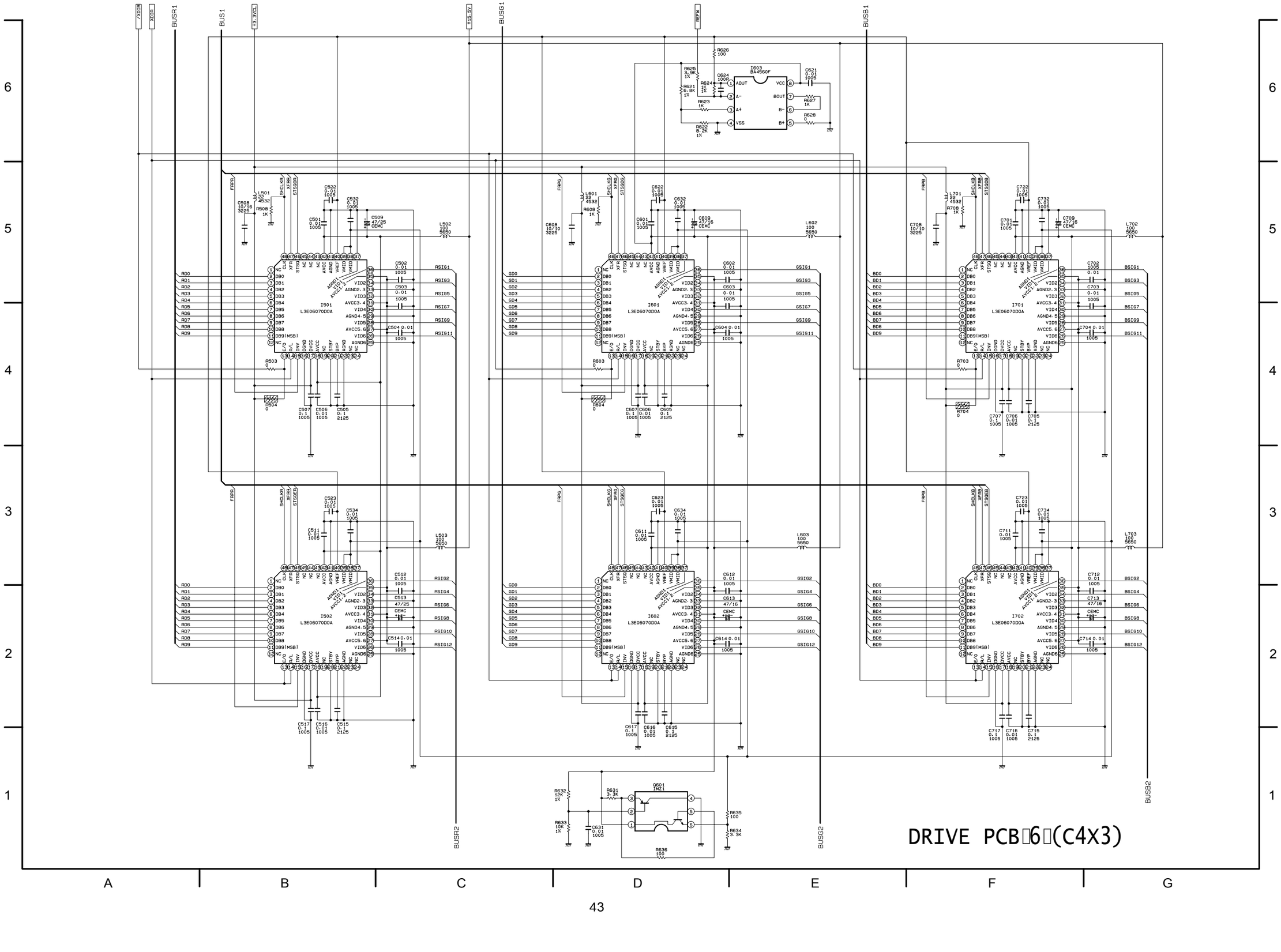
PJ750-2
CP-X380W

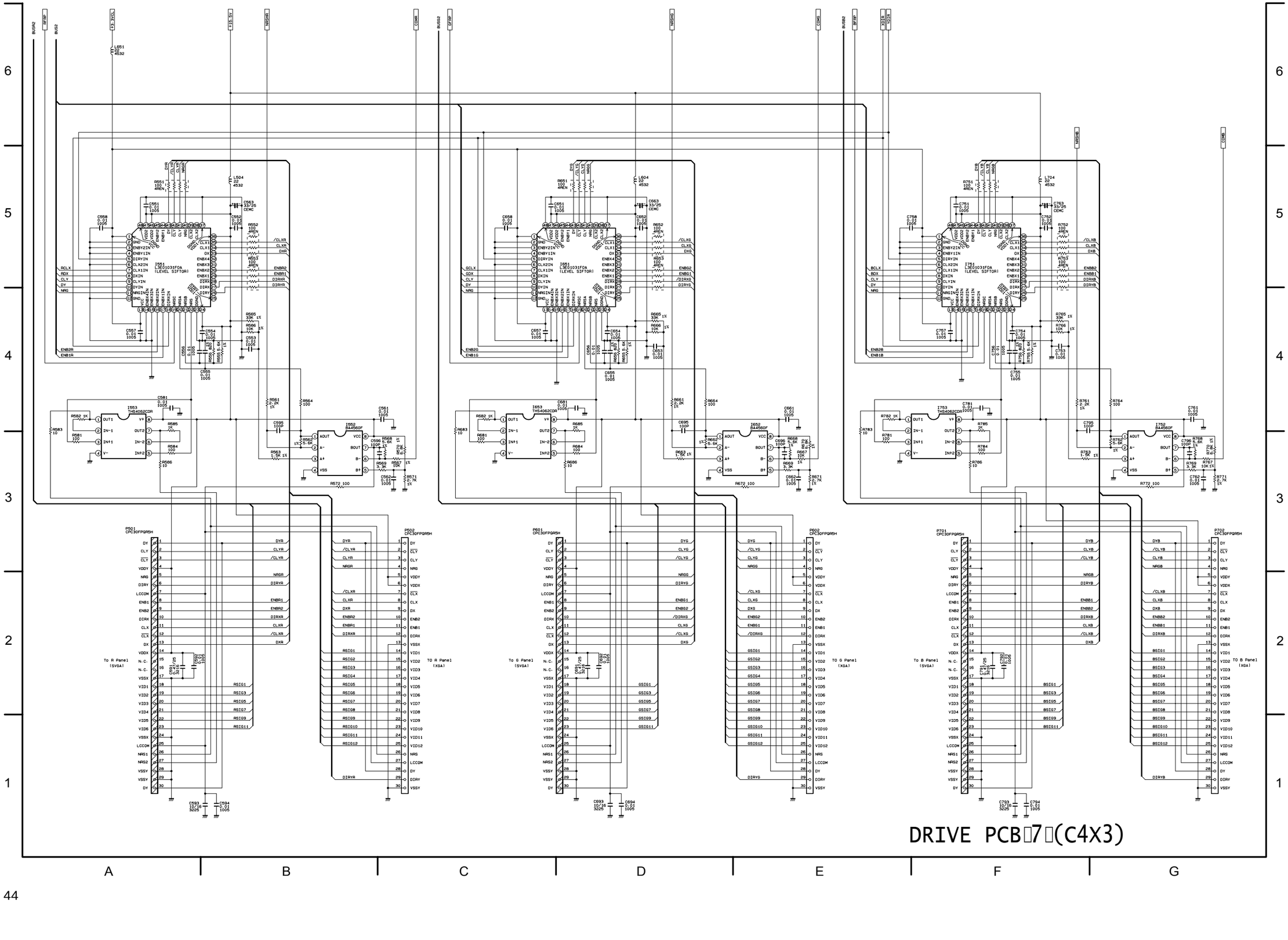


40

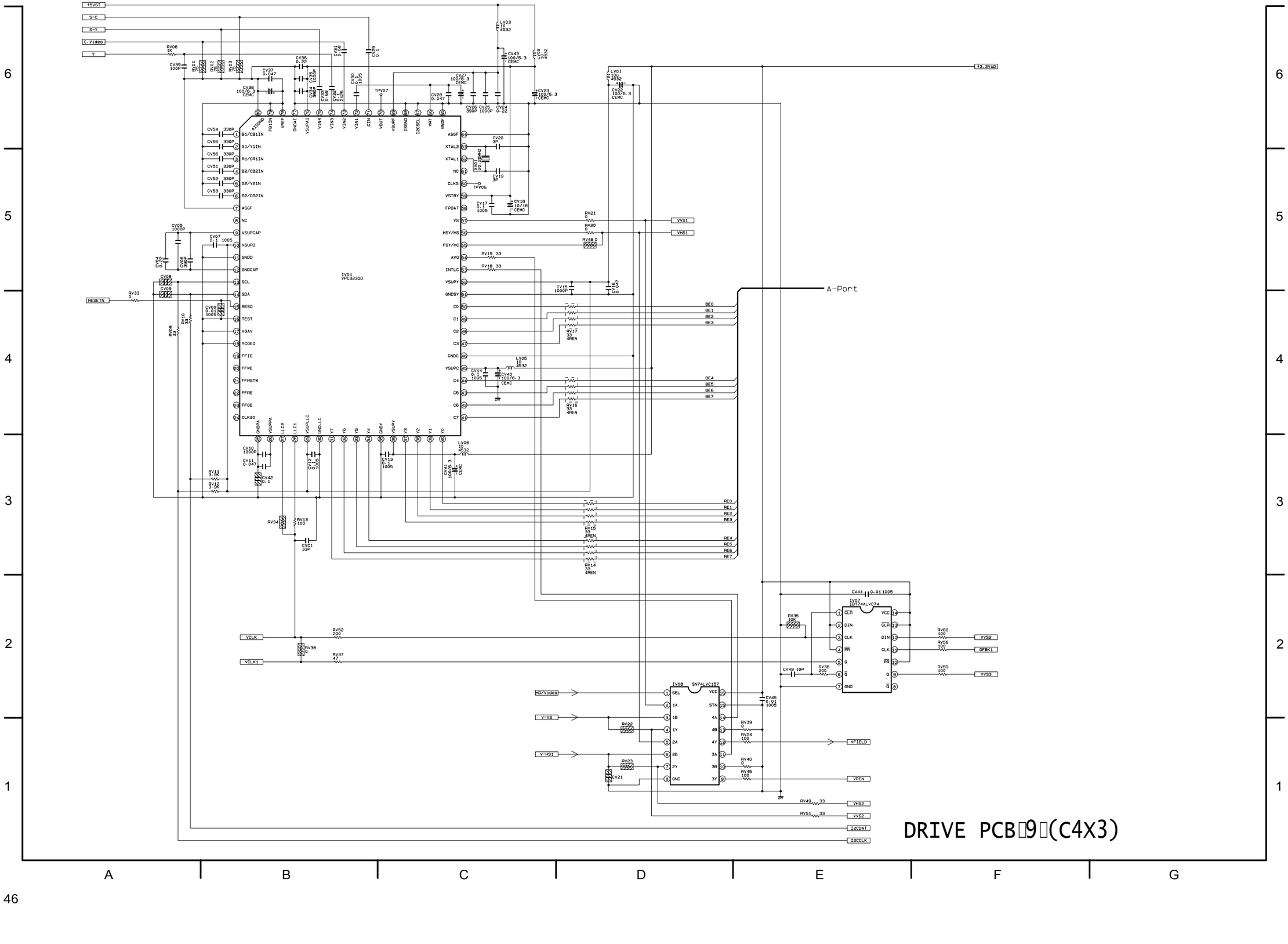
DRIVE PCB□4□(C4X3)

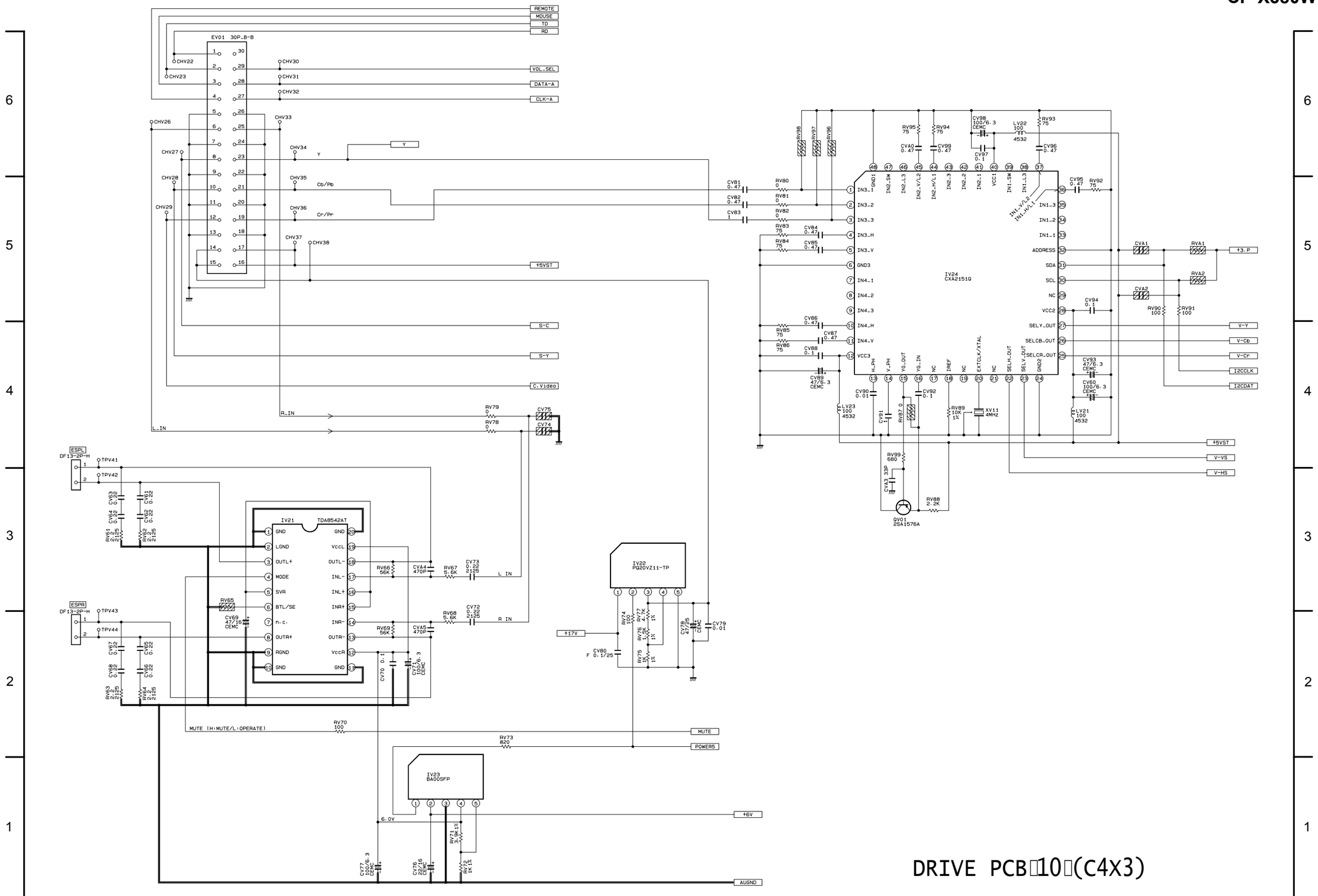

DRIVE PCB□5□(C4X3)
I401
L3E07050K0A
I402 RN5VD26CA-TR
I403 74LV04A
I451 BA25BC0FP +2.5V
L401 NFM60R 3216
L402 NFM60R 3216
+3.3VCL
VDD1
VDD2
DATA2
CLK2
CS2
BUS3
COLOR-U
DHS
DVS
H:OFF L:ON
DCLK
DIRY
DIRX
/XDIR
XDIR
YDIR
SHCLKR
XFRR
STSQER
STSQOR
FRPR
ENB1R
ENB2R
RDX
RCLX
SHCLKG
XFRG
STSQEG
STSQOG
FRPG
ENB1G
ENB2G
GDX
GCLX
SHCLKB
XFRB
STSQEB
STSQOB
FRPB
ENB1B
ENB2B
BDX
BCLX
DY
NRG
CLY
BFRP
GFRP
RFRP
BUS B1
BUS G1
BUS R1
BUS1
BUS2


/XDIR
XDIR
BUSR1
BUS1
+3.3VCL
+15.5V
BUSG1
REFM
BUSB1
R626 100
R625 2.9K 1%
R624 1K 1%
R621 6.8K 1%
R623 1K
R622 8.2K 1%
I603 BA4560F
ADUT
A-
A+
VSS
VCC
BOUT
B-
B+
C624 1005
C621 0.01 1005
R627 1K
R628 0
FBPR
SHCLKR
XFBR
STSQDR
L501 33u 4532
R508 1K
C508 10/16 3225
C522 0.01 1005
C532 0.01 1005
C501 0.01 1005
C509 47/25 CEMC
L502 100 5650
I501
L3E06070D0A
C502 0.01 1005
C503 0.01 1005
C504 0.01 1005
RSIG1
RSIG3
RSIG5
RSIG7
RSIG9
RSIG11
R503 0
R504 0
C507 0.1 1005
C506 0.01 1005
C505 0.1 2125
RD0
RD1
RD2
RD3
RD4
RD5
RD6
RD7
RD8
RD9
FBPG
SHCLKG
XFBG
STSQDG
L601 33u 4532
R608 1K
C608 10/16 3225
C622 0.01 1005
C632 0.01 1005
C601 0.01 1005
C609 47/16 CEMC
L602 100 5650
I601
L3E06070D0A
C602 0.01 1005
C603 0.01 1005
C604 0.01 1005
GSIG1
GSIG3
GSIG5
GSIG7
GSIG9
GSIG11
R603 0
R604 0
C607 0.1 1005
C606 0.01 1005
C605 0.1 2125
GD0
GD1
GD2
GD3
GD4
GD5
GD6
GD7
GD8
GD9
FBPB
SHCLKB
XFBB
STSQDB
L701 33u 4532
R708 1K
C708 10/16 3225
C722 0.01 1005
C732 0.01 1005
C701 0.01 1005
C709 47/16 CEMC
L702 100 5650
I701
L3E06070D0A
C702 1005 0.01
C703 0.01 1005
C704 0.01 1005
BSIG1
BSIG3
BSIG5
BSIG7
BSIG9
BSIG11
R703 0
R704 0
C707 0.1 1005
C706 0.01 1005
C705 0.1 2125
BD0
BD1
BD2
BD3
BD4
BD5
BD6
BD7
BD8
BD9
FBPR
SHCLKR
XFBR
STSQDR
L503 100 5650
C523 0.01 1005
C534 0.01 1005
C511 0.01 1005
C512 0.01 1005
C513 47/25 CEMC
C514 0.01 1005
RSIG2
RSIG4
RSIG6
RSIG8
RSIG10
RSIG12
I502
L3E06070D0A
C517 0.1 1005
C516 0.01 1005
C515 0.1 2125
RD0
RD1
RD2
RD3
RD4
RD5
RD6
RD7
RD8
RD9
FBPG
SHCLKG
XFBG
STSQDG
L603 100 5650
C623 0.01 1005
C634 0.01 1005
C611 0.01 1005
C612 0.01 1005
C613 47/16 CEMC
C614 0.01 1005
GSIG2
GSIG4
GSIG6
GSIG8
GSIG10
GSIG12
I602
L3E06070D0A
C617 0.1 1005
C616 0.01 1005
C615 0.1 2125
GD0
GD1
GD2
GD3
GD4
GD5
GD6
GD7
GD8
GD9
FBPB
SHCLKB
XFBB
STSQDB
L703 100 5650
C723 0.01 1005
C734 0.01 1005
C711 0.01 1005
C712 0.01 1005
C713 47/16 CEMC
C714 0.01 1005
BSIG2
BSIG4
BSIG6
BSIG8
BSIG10
BSIG12
I702
L3E06070D0A
C717 0.1 1005
C716 0.01 1005
C715 0.1 2125
BD0
BD1
BD2
BD3
BD4
BD5
BD6
BD7
BD8
BD9
BUSR2
BUSG2
BUSB2
Q601 IMZ1
R632 12K 1%
R631 3.3K
R633 10K 1%
C631 0.01 1005
R635 100
R634 3.3K
R636 100
DRIVE PCB□6□(C4X3)


DRIVE PCB□7□(C4X3)
I651 LSE61031FQA (LEVEL SIFTOR)
I652 BA4560F
I653 THS4062CDR
P501 CPC30FPGRSH
P502 CPC30FPGRSH
To R Panel (SVGA)
TO R Panel (XGA)
I601 LSE61031FQA (LEVEL SIFTOR)
I602 BA4560F
I603 THS4062CDR
P601 CPC30FPGRSH
P602 CPC30FPGRSH
To G Panel (SVGA)
TO G Panel (XGA)
I751 LSE61031FQA (LEVEL SIFTOR)
I752 BA4560F
I753 THS4062CDR
P701 CPC30FPGRSH
P702 CPC30FPGRSH
To B Panel (SVGA)
TO B Panel (XGA)

DRIVE PCB□8□(C4X3)

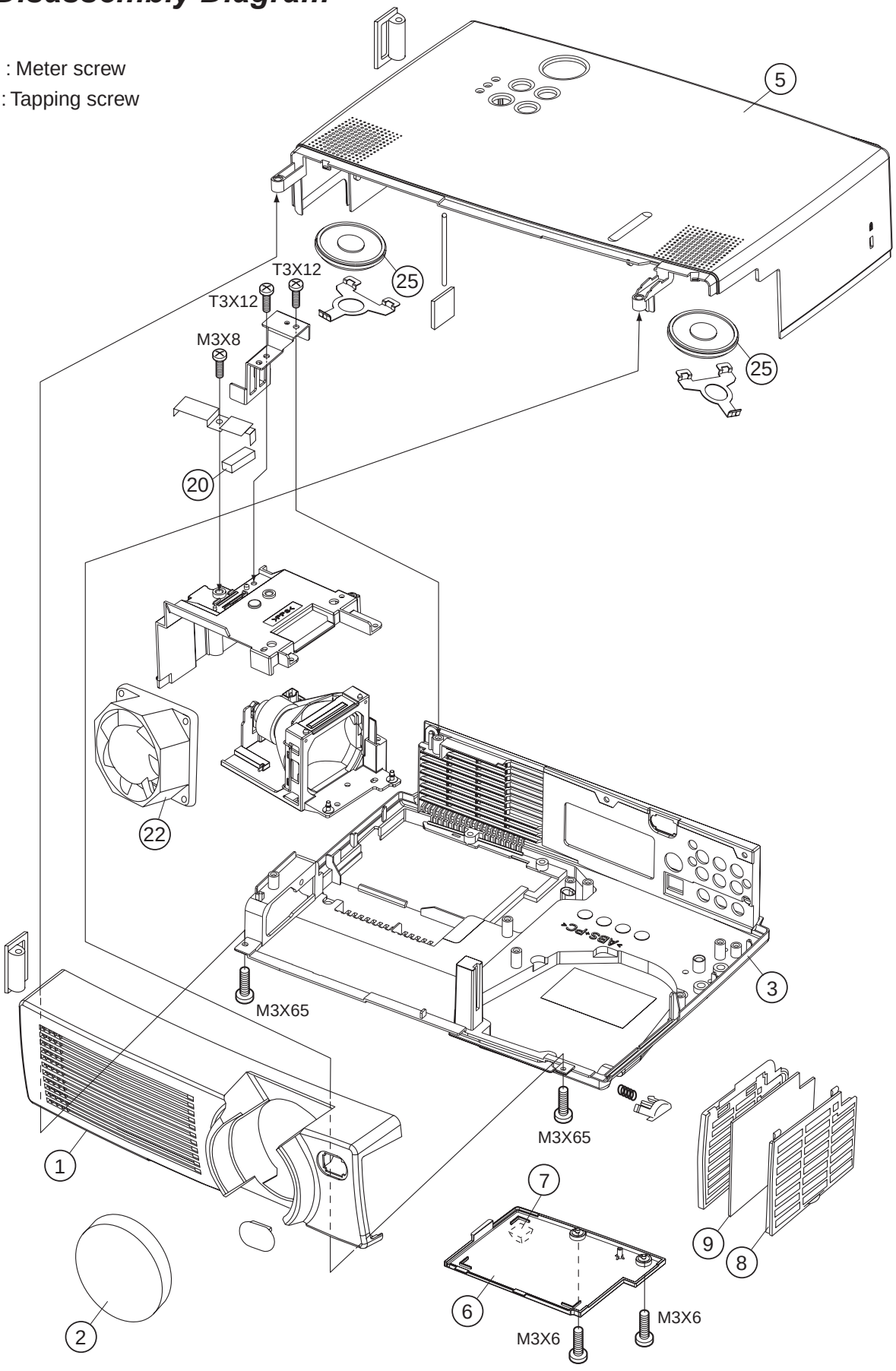

+5VST
S-C
S-Y
C.Video
Y
+3.3VAD
IV01
VPC3230D
IV07
IDT74ALVC74
IV08
SN74LVC157
A-Port
RESETN
VCLK
VCLK1
HD/Video
V-VS
V-HS1
VVS1
VHS1
VVS2
VHS2
GFBK1
VVS3
VFIELD
VPEN
I2CDAT
I2CCLK
DRIVE PCB 9 (C4X3)

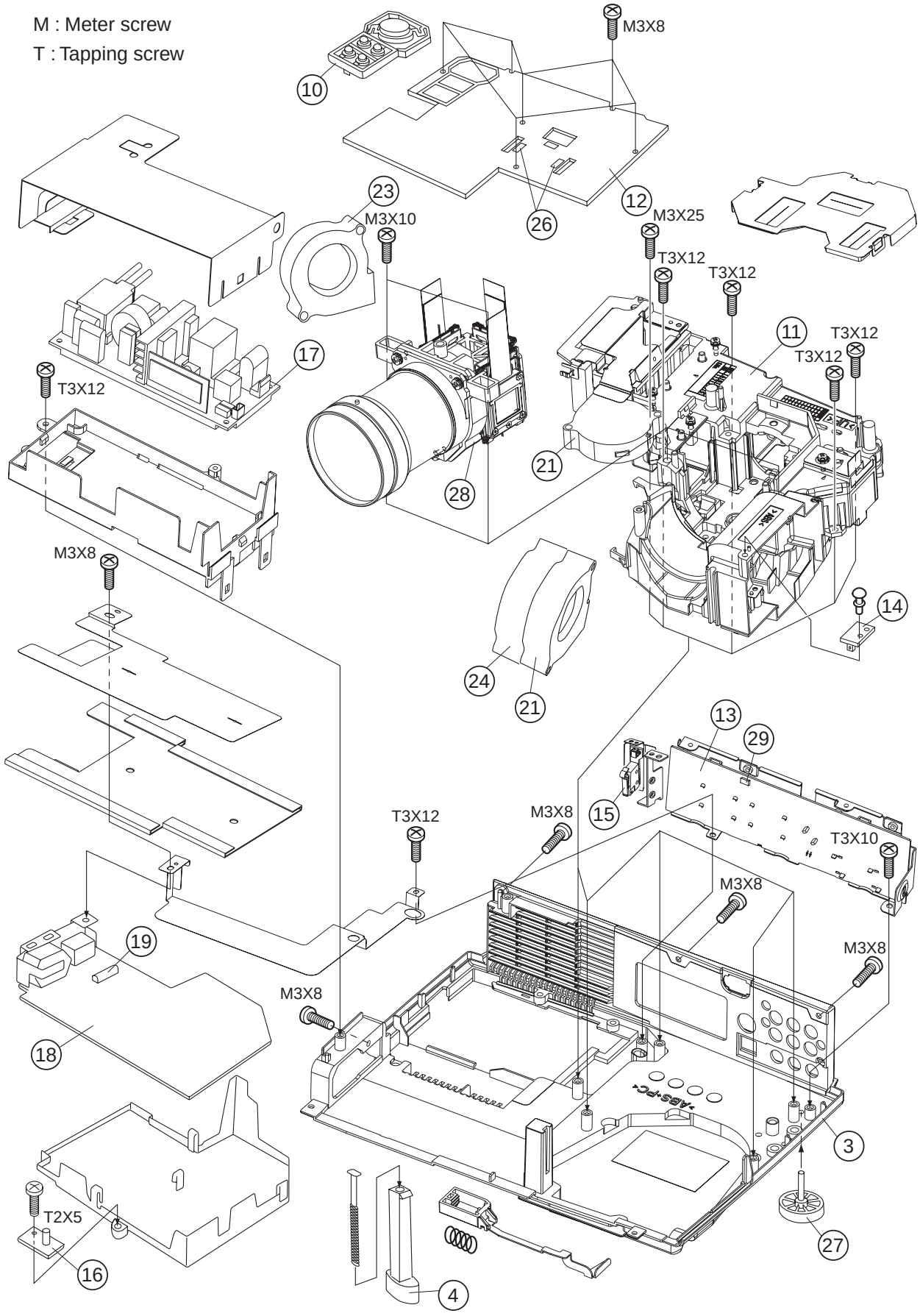


DRIVE PCB□10□(C4X3)

11. Disassembly Diagram

M : Meter screw
T : Tapping screw




M : Meter screw
T : Tapping screw
M3X8
10
12
26
23
M3X10
M3X25
T3X12
T3X12
11
T3X12
T3X12
17
T3X12
28
21
M3X8
14
24
21
13
29
15
T3X12
M3X8
T3X10
M3X8
M3X8
M3X8
19
18
3
T2X5
16
27
4

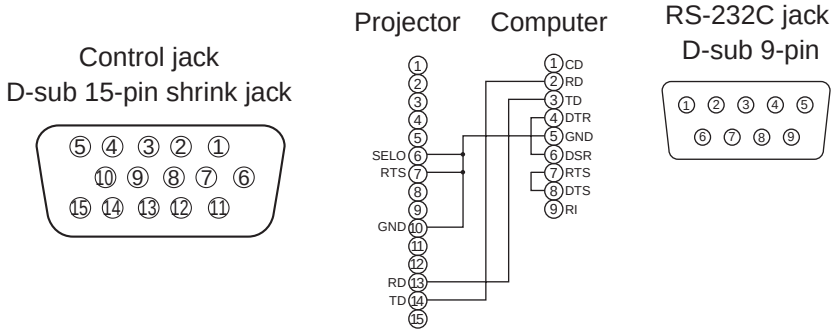
THE UPDATED PARTS LIST

FOR THIS MODEL IS

AVAILABLE ON ESTA

13. RS-232C Communication

(1) Turn off the projector and computer power supplies and connect with the RS-232C cable.
(2) Turn on the computer power supply and, after the computer has started up, turn on the projector power supply.



Communications setting

19,200bps, 8N1

1 Protocol

Consist of header (7 bytes) + command data (6 bytes).

2 Header

BE + EF + 03 + 06 + 00 + CRC_low + CRC_high.
CRC_low : Lower byte of CRC flag for command data.
CRC_high : Upper byte of CRC flag for command data.

3 Command data

Command data chart

byte_0	byte_1	byte_2	byte_3	byte_4	byte_5
Action		Type		Setting code	
low	high	low	high	low	high

Action (byte_0 - 1)

Action	Classification	Content
1	SET	Change setting to desired value.
2	GET	Read projector internal setup value.
4	INCREMENT	Increment setup value by 1.
5	DECREMENT	Decrement setup value by 1.
6	EXECUTE	Run a command.

Requesting projector status (Get command)

(1) Send the request code Header + Command data ('02H'+'00H'+ type (2 bytes) +'00H'+'00H') from the computer to the projector.
(2) The projector returns the response code '1DH'+ data (2 bytes) to the computer.

Changing the projector settings (Set command)

(1) Send the setting code Header + Command data ('01H'+'00H'+ type (2 bytes) + setting code (2 bytes)) from the computer to the projector.
(2) The projector changes the setting based on the above setting code.
(3) The projector returns the response code '06H' to the computer.

Using the projector default settings (Reset Command)

(1) The computer sends the default setting code Header + Command data ('06H'+'00H'+ type (2 bytes) +'00H'+'00H') to the projector.
(2) The projector changes the specified setting to the default value.
(3) The projector returns the response code '06H' to the computer.

Increasing the projector setting value (Increment command)

(1) The computer sends the increment code Header + Command data ('04H'+'00H'+ type (2 bytes) +'00H'+'00H') to the projector.
(2) The projector increases the setting value on the above setting code.
(3) The projector returns the response code '06H' to the computer.

Decreasing the projector setting value (Decrement command)

(1) The computer sends the decrement code Header + Command data ('05H'+'00H'+ type (2 bytes) +'00H'+'00H') to the projector.
(2) The projector decreases the setting value on the above setting code.
(3) The projector returns the response code '06H' to the computer.

When a command sent by the projector cannot be understood by the computer

When the command sent by the projector cannot be understood, the error command '15H' is returned by the computer. Some times, the projector ignores RS-232C commands during other works. If the error command '15H' is returned, please send the same command again.

When data sent by the projector cannot be processed

When the command sent by the projector cannot be processed, the error code '1cH' +'xxxxH' is returned.
When the data length is greater than indicated by the data length code, the projector will ignore the excess data code. Conversely, when the data length is shorter than indicated by the data length code, an error code will be returned to the projector.

NOTE:

- Operation cannot be guaranteed when the projector receives an undefined command or data.
- Provide an interval of at least 40ms between the response code and any other code.
- The projector outputs test data when the power supply is switched ON, and when the lamp is lit. Ignore this data.
- Commands are not accepted during warm-up.

Command Data Chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Blank Color	Set	Red	BE EF 03 06 00	3B D3	01 00	00 30	00 00
		Orange	BE EF 03 06 00	AB D2	01 00	00 30	01 00
		Green	BE EF 03 06 00	5B D2	01 00	00 30	02 00
		Blue	BE EF 03 06 00	CB D3	01 00	00 30	03 00
		Purple	BE EF 03 06 00	FB D1	01 00	00 30	04 00
		White	BE EF 03 06 00	6B D0	01 00	00 30	05 00
		Black	BE EF 03 06 00	9B D0	01 00	00 30	06 00
	Get		BE EF 03 06 00	08 D3	02 00	00 30	00 00
Mirror	Set	Normal	BE EF 03 06 00	C7 D2	01 00	01 30	00 00
		H Inverse	BE EF 03 06 00	57 D3	01 00	01 30	01 00
		V Inverse	BE EF 03 06 00	A7 D3	01 00	01 30	02 00
		H&V Inverse	BE EF 03 06 00	37 D2	01 00	01 30	03 00
	Get		BE EF 03 06 00	F4 D2	02 00	01 30	00 00
Freeze	Set	Normal	BE EF 03 06 00	83 D2	01 00	02 30	00 00
		Freeze	BE EF 03 06 00	13 D3	01 00	02 30	01 00
	Get		BE EF 03 06 00	B0 D2	02 00	02 30	00 00
Menu Color	Set	Red	BE EF 03 06 00	7F D3	01 00	03 30	00 00
		Orange	BE EF 03 06 00	EF D2	01 00	03 30	01 00
		Green	BE EF 03 06 00	1F D2	01 00	03 30	02 00
		Blue	BE EF 03 06 00	8F D3	01 00	03 30	03 00
		Purple	BE EF 03 06 00	BF D1	01 00	03 30	04 00
		Transparent	BE EF 03 06 00	2F D0	01 00	03 30	05 00
		Gray	BE EF 03 06 00	DF D0	01 00	03 30	06 00
	Get		BE EF 03 06 00	4C D3	02 00	03 30	00 00
Startup	Set	Turn ON	BE EF 03 06 00	0B D2	01 00	04 30	00 00
		Turn OFF	BE EF 03 06 00	9B D3	01 00	04 30	01 00
	Get		BE EF 03 06 00	38 D2	02 00	04 30	00 00
Language	Set	English	BE EF 03 06 00	F7 D3	01 00	05 30	00 00
		Français	BE EF 03 06 00	67 D2	01 00	05 30	01 00
		Deutsch	BE EF 03 06 00	97 D2	01 00	05 30	02 00
		Español	BE EF 03 06 00	07 D3	01 00	05 30	03 00
		Italiano	BE EF 03 06 00	37 D1	01 00	05 30	04 00
		Norsk	BE EF 03 06 00	A7 D0	01 00	05 30	05 00
		Nederlands	BE EF 03 06 00	57 D0	01 00	05 30	06 00
		Português	BE EF 03 06 00	C7 D1	01 00	05 30	07 00
		Japanese	BE EF 03 06 00	37 D4	01 00	05 30	08 00
	Get		BE EF 03 06 00	C4 D3	02 00	05 30	00 00

Command Data Chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Magnify	Get		BE EF 03 06 00	7C D2	02 00	07 30	00 00
	Increment		BE EF 03 06 00	1A D2	04 00	07 30	00 00
	Decrement		BE EF 03 06 00	CB D3	05 00	07 30	00 00
Auto off	Get		BE EF 03 06 00	08 86	02 00	10 31	00 00
	Increment		BE EF 03 06 00	6E 86	04 00	10 31	00 00
	Decrement		BE EF 03 06 00	BF 87	05 00	10 31	00 00
Brightness Reset	Execute		BE EF 03 06 00	58 D3	06 00	00 70	00 00
Contrast Reset	Execute		BE EF 03 06 00	A4 D2	06 00	01 70	00 00
V.Position Reset	Execute		BE EF 03 06 00	E0 D2	06 00	02 70	00 00
H.Position Reset	Execute		BE EF 03 06 00	IC D3	06 00	03 70	00 00
H.Size Reset	Execute		BE EF 03 06 00	68 D2	06 00	04 70	00 00
Color Balance R Reset	Execute		BE EF 03 06 00	94 D3	06 00	05 70	00 00
Color Balance B Reset	Execute		BE EF 03 06 00	D0 D3	06 00	06 70	00 00
Sharpness Reset	Execute		BE EF 03 06 00	C4 D0	06 00	09 70	00 00
Color Reset	Execute		BE EF 03 06 00	80 D0	06 00	0A 70	00 00
Tint Reset	Execute		BE EF 03 06 00	7C D1	06 00	0B 70	00 00
Keystone_V Reset	Execute		BE EF 03 06 00	08 D0	06 00	0C 70	00 00
Auto	Execute		BE EF 03 06 00	91 D0	06 00	0A 20	00 00
Blank on/off	Set	off	BE EF 03 06 00	FB D8	01 00	20 30	00 00
		on	BE EF 03 06 00	6B D9	01 00	20 30	01 00
	Get		BE EF 03 06 00	C8 D8	02 00	20 30	00 00
Error Status	Get		BE EF 03 06 00	D9 D8	02 00	20 60	00 00
			(Example of Return) 00 00 (Normal) 01 00 (Cover-error) 02 00 (Fan-error) 03 00 (Lamp-error) 04 00 (Temp-error) 05 00 (Air flow-error) 06 00 (Lamp-Time-over)				
Power	Set	OFF	BE EF 03 06 00	2A D3	01 00	00 60	00 00
		ON	BE EF 03 06 00	BA D2	01 00	00 60	01 00
	Get		BE EF 03 06 00	19 D3	02 00	00 60	00 00
Input Source	Set	RGB1	BE EF 03 06 00	FE D2	01 00	00 20	00 00
		RGB2	BE EF 03 06 00	3E D0	01 00	00 20	04 00
		Video	BE EF 03 06 00	6E D3	01 00	00 20	01 00
		SVideo	BE EF 03 06 00	9E D3	01 00	00 20	02 00
		Component	BE EF 03 06 00	AE D1	01 00	00 20	05 00
	Get		BE EF 03 06 00	CD D2	02 00	00 20	00 00
Volume	Get		BE EF 03 06 00	31 D3	02 00	01 20	00 00
	Increment		BE EF 03 06 00	57 D3	04 00	01 20	00 00
	Decrement		BE EF 03 06 00	86 D2	05 00	01 20	00 00

Command Data Chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Mute	Set	Normal	BE EF 03 06 00	46 D3	01 00	02 20	00 00
		Mute	BE EF 03 06 00	D6 D2	01 00	02 20	01 00
	Get		BE EF 03 06 00	75 D3	02 00	02 20	00 00
Brightness	Get		BE EF 03 06 00	89 D2	02 00	03 20	00 00
	Increment		BE EF 03 06 00	EF D2	04 00	03 20	00 00
	Decrement		BE EF 03 06 00	3E D3	05 00	03 20	00 00
Contrast	Get		BE EF 03 06 00	FD D3	02 00	04 20	00 00
	Increment		BE EF 03 06 00	9B D3	04 00	04 20	00 00
	Decrement		BE EF 03 06 00	4A D2	05 00	04 20	00 00
Color Balance R	Get		BE EF 03 06 00	01 D2	02 00	05 20	00 00
	Increment		BE EF 03 06 00	67 D2	04 00	05 20	00 00
	Decrement		BE EF 03 06 00	B6 D3	05 00	05 20	00 00
Color Balance B	Get		BE EF 03 06 00	45 D2	02 00	06 20	00 00
	Increment		BE EF 03 06 00	23 D2	04 00	06 20	00 00
	Decrement		BE EF 03 06 00	F2 D3	05 00	06 20	00 00
Keystone_V	Get		BE EF 03 06 00	B9 D3	02 00	07 20	00 00
	Increment		BE EF 03 06 00	DF D3	04 00	07 20	00 00
	Decrement		BE EF 03 06 00	0E D2	05 00	07 20	00 00
Aspect	Set	4:3, Full	BE EF 03 06 00	9E D0	01 00	08 20	00 00
		16:9	BE EF 03 06 00	0E D1	01 00	08 20	01 00
		Small	BE EF 03 06 00	FE D1	01 00	08 20	02 00
	Get		BE EF 03 06 00	AD D0	02 00	08 20	00 00
Display Position at 16 : 9 or Small	Set	Default	BE EF 03 06 00	62 D1	01 00	09 20	00 00
		Bottom	BE EF 03 06 00	F2 D0	01 00	09 20	01 00
		Top	BE EF 03 06 00	02 D0	01 00	09 20	02 00
	Get		BE EF 03 06 00	51 D1	02 00	09 20	00 00
V.Position	Get		BE EF 03 06 00	0D 83	02 00	00 21	00 00
	Increment		BE EF 03 06 00	6B 83	04 00	00 21	00 00
	Decrement		BE EF 03 06 00	BA 82	05 00	00 21	00 00
H.Position	Get		BE EF 03 06 00	F1 82	02 00	01 21	00 00
	Increment		BE EF 03 06 00	97 82	04 00	01 21	00 00
	Decrement		BE EF 03 06 00	46 83	05 00	01 21	00 00
H.Size	Get		BE EF 03 06 00	B5 82	02 00	02 21	00 00
	Increment		BE EF 03 06 00	D3 82	04 00	02 21	00 00
	Decrement		BE EF 03 06 00	02 83	05 00	02 21	00 00
H.Phase	Get		BE EF 03 06 00	49 83	02 00	03 21	00 00
	Increment		BE EF 03 06 00	2F 83	04 00	03 21	00 00
	Decrement		BE EF 03 06 00	FE 82	05 00	03 21	00 00

Command Data Chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Sharpness	Get		BE EF 03 06 00	F1 72	02 00	01 22	00 00
	Increment		BE EF 03 06 00	97 72	04 00	01 22	00 00
	Decrement		BE EF 03 06 00	46 73	05 00	01 22	00 00
Color	Get		BE EF 03 06 00	B5 72	02 00	02 22	00 00
	Increment		BE EF 03 06 00	D3 72	04 00	02 22	00 00
	Decrement		BE EF 03 06 00	02 73	05 00	02 22	00 00
Tint	Get		BE EF 03 06 00	49 73	02 00	03 22	00 00
	Increment		BE EF 03 06 00	2F 73	04 00	03 22	00 00
	Decrement		BE EF 03 06 00	FE 72	05 00	03 22	00 00
Video Format	Set	Auto	BE EF 03 06 00	9E 75	01 00	00 22	0A 00
		NTSC	BE EF 03 06 00	FE 71	01 00	00 22	04 00
		PAL	BE EF 03 06 00	6E 70	01 00	00 22	05 00
		SECAM	BE EF 03 06 00	6E 75	01 00	00 22	09 00
		NTSC 4.43	BE EF 03 06 00	5E 72	01 00	00 22	02 00
		M-PAL	BE EF 03 06 00	FE 74	01 00	00 22	08 00
		N-PAL	BE EF 03 06 00	0E 71	01 00	00 22	07 00
	Get		BE EF 03 06 00	0D 73	02 00	00 22	00 00
HDTV	Set	1080i	BE EF 03 06 00	F2 73	01 00	05 22	00 00
		1035i	BE EF 03 06 00	62 72	01 00	05 22	01 00
	Get		BE EF 03 06 00	C1 73	02 00	05 22	00 00

Command Data Chart

Names	Operation type		Header	CRC	Command data		
					Action	Type	Setting code
Sync on G	Set	off	BE EF 03 06 00	CB D0	01 00	08 30	01 00
		on	BE EF 03 06 00	5B D1	01 00	08 30	00 00
	Get		BE EF 03 06 00	68 D1	02 00	08 30	00 00
WHISPER	Set	NORMAL	BE EF 03 06 00	3B 23	01 00	00 33	00 00
		WHISPER	BE EF 03 06 00	AB 22	01 00	00 33	01 00
	Get		BE EF 03 06 00	08 23	02 00	00 33	00 00
GAMMA	Set	NORMAL	BE EF 03 06 00	C7 F0	01 00	A1 30	00 00
		CINEMA	BE EF 03 06 00	57 F1	01 00	A1 30	01 00
		DYNAMIC	BE EF 03 06 00	A7 F1	01 00	A1 30	02 00
	Get		BE EF 03 06 00	F4 F0	02 00	A1 30	00 00
COLOR TEMP	Set	NORMAL	BE EF 03 06 00	FB F5	01 00	B0 30	00 00
		LOW	BE EF 03 06 00	6B F4	01 00	B0 30	01 00
	Get		BE EF 03 06 00	C8 F5	02 00	B0 30	00 00

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